SMITHSONIAN INSTITUTION
BUREAU OF AMERICAN ETHNOLOGY
BULLETIN 118

AN ARCHAEOLOGICAL SURVEY OF THE NORRIS BASIN IN EASTERN TENNESSEE

By
WILLIAM S. WEBB

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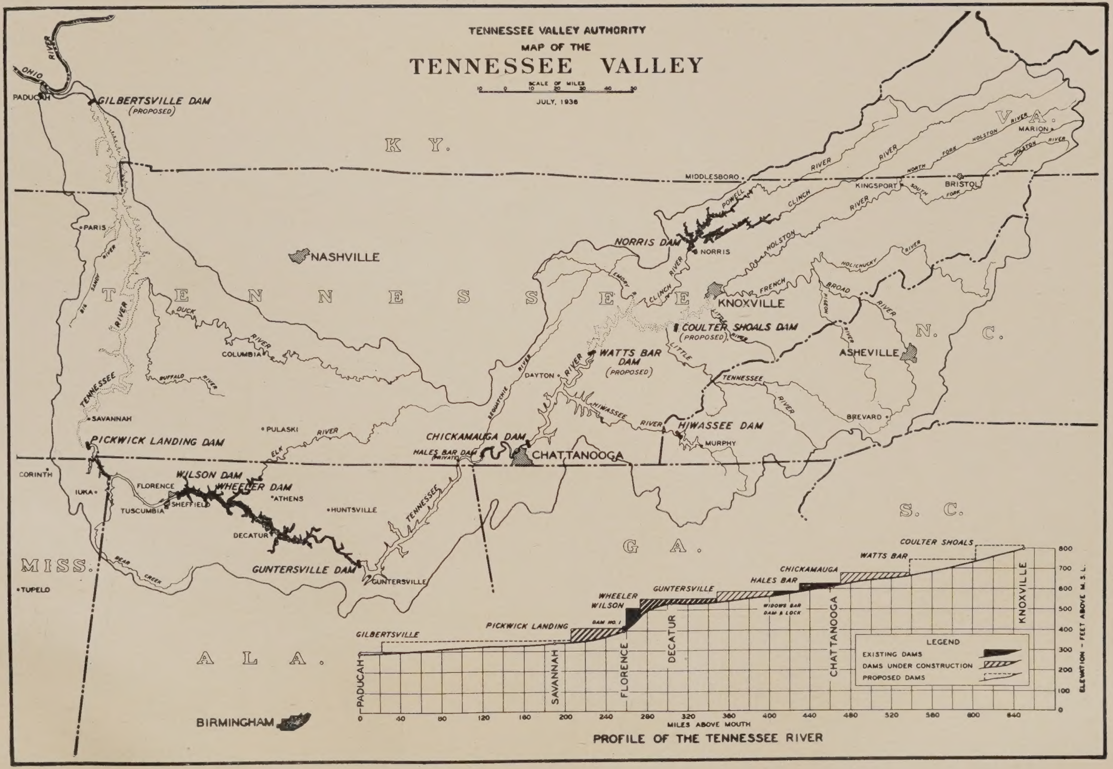
TENNESSEE VALLEY AUTHORITY
MAP OF THE
TENNESSEE VALLEY
SCALE OF MILES
10 0 10 20 30 40 50
JULY, 1936
OHIO RIVER
PADUCAH
GILBERTSVILLE DAM (PROPOSED)
K Y.
MIDDLESBORO
KINGSPORT
BRISTOL
MARION
V A.
NORRIS DAM
NORRIS
NASHVILLE
T E N N E S S E E
KNOXVILLE
COULTER SHOALS DAM (PROPOSED)
WATTS BAR DAM (PROPOSED)
ASHEVILLE
N. C.
BREVARD
HIWASSEE DAM
MURPHY
DAYTON
CHICKAMAUGA DAM
HALES BAR DAM (PRIVATE)
CHATTANOOGA
PARIS
COLUMBIA
SAVANNAH
PULASKI
PICKWICK LANDING DAM
CORINTH
IUKA
FLORENCE
TUSCUMBIA
SHEFFIELD
WILSON DAM
WHEELER DAM
ATHENS
HUNTSVILLE
DECATUR
GUNTERSVILLE DAM
GUNTERSVILLE
MISS.
TUPELO
A L A.
BIRMINGHAM
G A.
S. C.
POWELL RIVER
CLINCH RIVER
HOLSTON RIVER
NORTH FORK HOLSTON RIVER
SOUTH FORK
NOLICHUCKY RIVER
FRENCH BROAD RIVER
PIGEON
LITTLE RIVER
LITTLE TENNESSEE RIVER
TENNESSEE RIVER
HIWASSEE RIVER
EMORY R.
SEQUATCHIE RIVER
ELK RIVER
DUCK RIVER
BUFFALO RIVER
BIG SANDY RIVER
BEAR CREEK
PROFILE OF THE TENNESSEE RIVER
ELEVATION - FEET ABOVE M.S.L.
0 100 200 300 400 500 600 700 800
MILES ABOVE MOUTH
0 40 80 120 160 200 240 280 320 360 400 440 480 520 560 600 640
PADUCAH
SAVANNAH
FLORENCE
DECATUR
CHATTANOOGA
KNOXVILLE
GILBERTSVILLE
PICKWICK LANDING
DAM NO. 1
WILSON
WHEELER
GUNTERSVILLE
WIDOWS BAR DAM & LOCK
HALES BAR
CHICKAMAUGA
WATTS BAR
COULTER SHOALS
LEGEND
EXISTING DAMS
DAMS UNDER CONSTRUCTION
PROPOSED DAMS

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WILLIAM S. WEBB

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LETTER OF TRANSMITTAL

Smithsonian Institution,
Bureau of American Ethnology,
Washington, D. C., July 12, 1937.

Sir: I have the honor to transmit herewith a manuscript entitled "An Archaeological Survey of the Norris Basin in Eastern Tennessee", by William S. Webb, and to recommend that it be published as a bulletin of the Bureau of American Ethnology. The funds for the publication of this report have been made available by the Tennessee Valley Authority.

Very respectfully yours,

M. W. Stirling, *Chief.*

Dr. C. G. Abbot,
Secretary of the Smithsonian Institution.

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FOREWORD

This bulletin, An Archaeological Survey of the Norris Basin in Eastern Tennessee, is the first of a series of archaeological reports based on studies conducted under the direction of the Research Section, Social and Economic Division, Tennessee Valley Authority.

In planning the work of the Tennessee Valley Authority it became evident that the building of dams on the Tennessee River and its tributaries and the flooding of large areas would cover with impounded water many sites showing evidence of man's prehistoric occupancy of the valley. Valuable evidences of prehistory would thus either be destroyed or forever placed beyond any possibility of investigation. The board of directors was concerned with this problem of conservation and expressed a desire to conserve to future generations the wealth of archaeological material and information available in the Tennessee Valley area.

The study of the Norris Basin was carried on under the technical supervision of Maj. William S. Webb, Senior Archaeologist, Tennessee Valley Authority, with the assistance of a number of governmental agencies. The Civil Works Administration and the Federal Emergency Relief Administration supplied labor for the field work. The University of Tennessee provided laboratory facilities for the study of the materials recovered.

The preparation of this report was begun after the close of field work in July 1934, and the manuscript was submitted for publication in September 1935. A report of the archaeology of the Wheeler Basin is now being prepared, and it is hoped that additional publications dealing with the prehistory of the other basins—Pickwick Landing, Chickamauga, and Guntersville—can be added to this series.

T. Levron Howard,
Chief, Research Section, Social and Economic Division,
Tennessee Valley Authority.

Knoxville, Tenn., June *1937.*

AN ARCHAEOLOGICAL SURVEY OF THE NORRIS BASIN IN EASTERN TENNESSEE

By William S. Webb

INTRODUCTION

As early as August 1933 the suggestion was made by interested citizens that the Tennessee Valley Authority should undertake archaeological investigations in the areas to be flooded by the building of dams on the streams in the Tennessee Valley. It was recognized that the construction of dams and the consequent flooding of large areas adjacent to such construction would destroy all records of prehistoric occupation and forever prevent future archaeological investigation of such inundated regions.

The importance of such areas for archaeological investigation is at once apparent. For prehistoric man the rivers were his highways. The rivers were attractive to aboriginal man also because there he found a never-ending source of food in great quantity which was comparatively easy to obtain. The fertile bottom lands furnished ideal sites for the location of villages, especially for those peoples practicing rudimentary agriculture. Since this region was the known home of diverse Indian tribes in early historic times, it was to be expected that the areas along the streams of the Tennessee Valley would show much evidence of prehistoric occupation.

While the desirability of an archaeological survey of this region was obvious, the means for its accomplishment were not at once available. Many obstacles stood in the way of such a project. With the initiation of the Civil Works Administration, however, at least one of these obstacles was removed. It was immediately suggested that an archaeological survey of the areas to be inundated was one of the important projects which could be sponsored by the Tennessee Valley Authority and in which Civil Works Administration labor could well be employed.

In December 1933 a conference was called in Knoxville, which was attended by representatives of the Tennessee Valley Authority, the University of Tennessee, and the University of Alabama. Mr. Neil M. Judd, curator of archaeology of the United States National

Museum, was invited to act as a consultant for this group. As a result of tentative plans and suggestions made at this conference, the work of the survey of the Norris Basin was begun about January 8, 1934, with the author acting as supervising archaeologist for the Tennessee Valley Authority. The work continued with the use of Civil Works Administration labor until the time of its demobilization in March 1934, and with various interruptions continued until July 1, 1934, using Federal Emergency Relief Administration labor.

This survey revealed 23 sites showing definite evidence of prehistoric occupation. The location of each of these sites is shown in the map of the Basin which accompanies this report (pl. 1). On the 23 sites investigated there were 20 earth mounds, 9 stone mounds, 4 village sites, and 7 caves. Of these 29 mounds, 12 were burial mounds and 17 were associated with prehistoric structures. On these sites were located the remains of 54 wooden structures, 20 of which were thought to have been dwellings and 34 of which have been designated as "town houses." Of these 34, 7 had suffered incomplete combustion and had collapsed and fallen after being reduced to charcoal. The detailed description of each of these sites in numerical order forms a large part of the body of the report.

After the close of field work in the basin all of the artifacts recovered were deposited at the University of Tennessee, where the author had opportunity to study and photograph them, in order that this additional information might supplement the large body of information obtained by field exploration. All skeletal material recovered was shipped to the department of anthropology and archaeology of the University of Kentucky for restoration, study, and report. Samples of potsherds from all sites were sent to the ceramic repository of the University of Michigan for study and report.

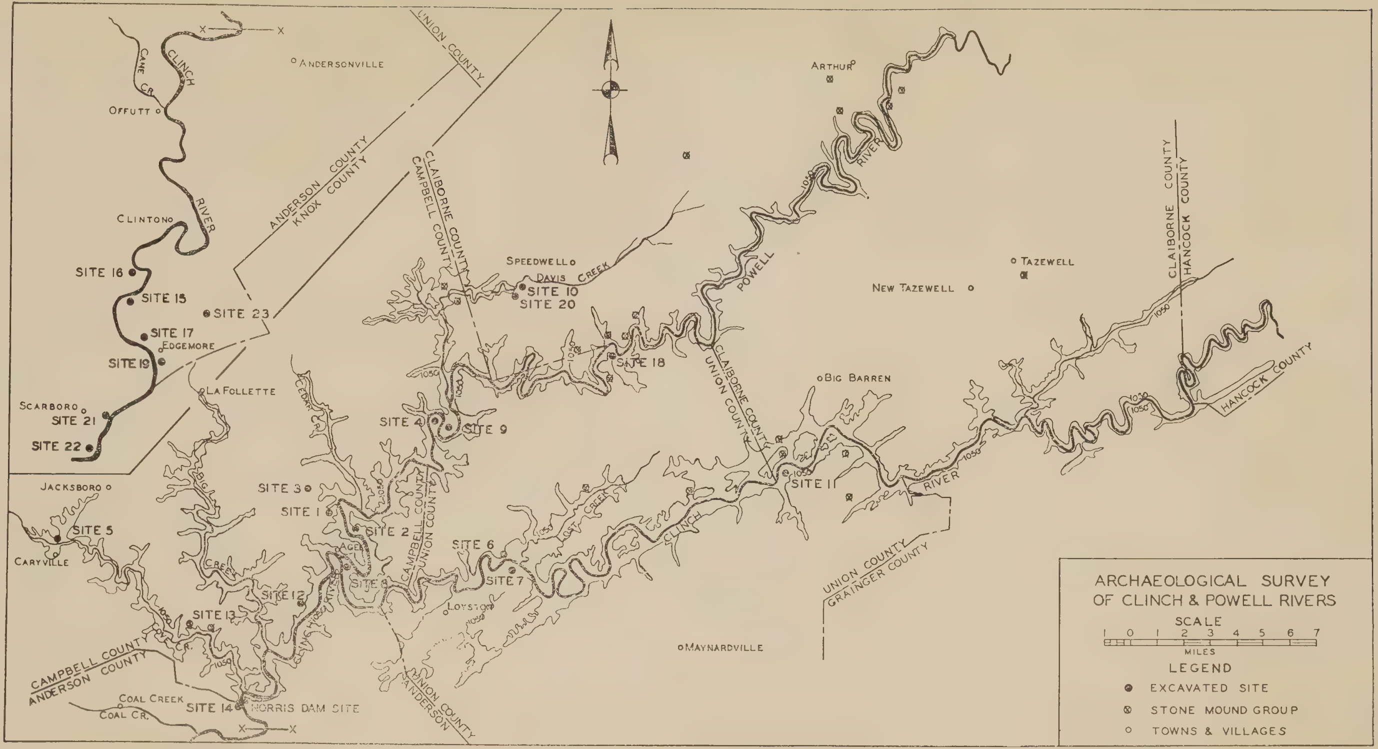
A study of the dendrochronology of the living trees of the Norris Basin, which was begun during the period of field work, was continued with gratifying results at the University of New Mexico. For this study samples of wood taken from the various sites excavated in the Norris Basin were used.

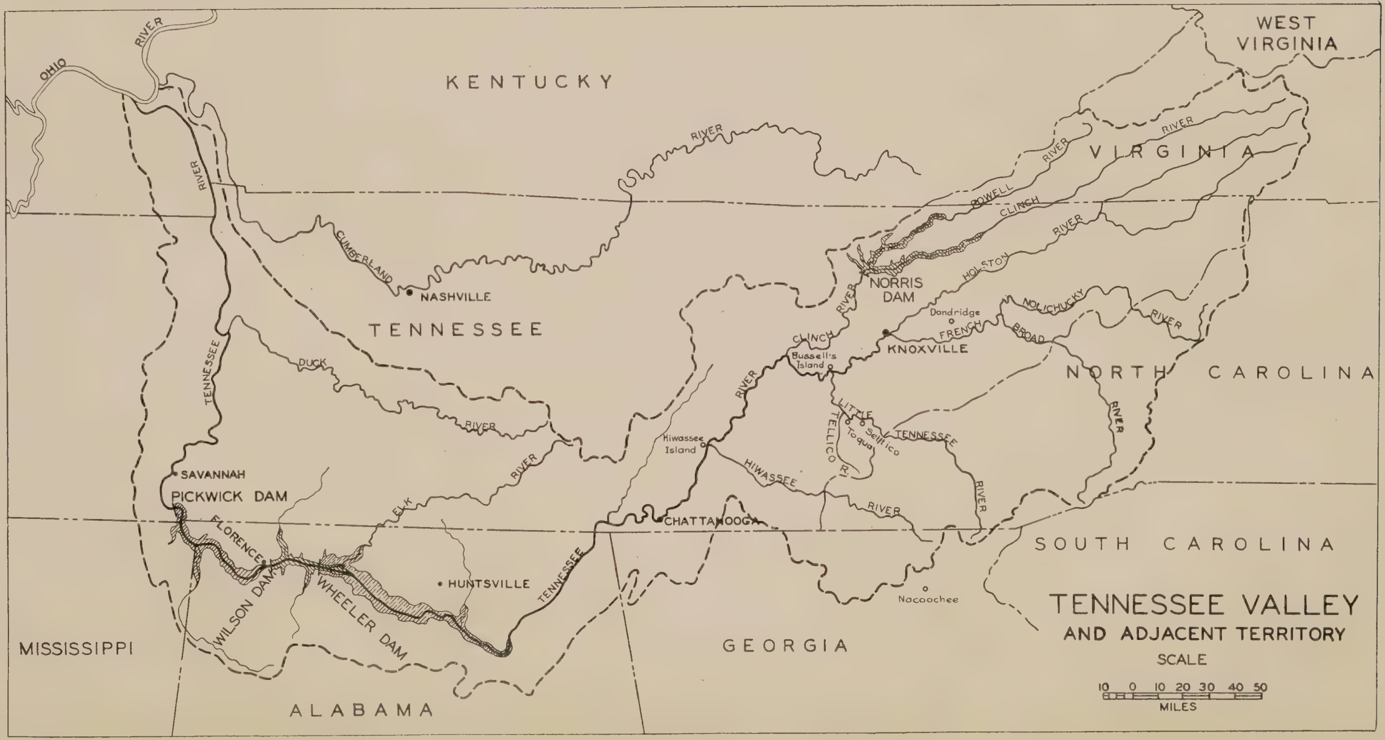
The results of all of these studies are included in this report as a valuable addition to the information recovered by the survey.

THE NORRIS BASIN

The construction of Norris Dam was begun in 1933 under the Tennessee Valley Authority Act of May 18, 1933. The dam was named for United States Senator George W. Norris, of Nebraska, who sponsored the bill creating the Tennessee Valley Authority.

Norris Dam is on the Clinch River, about 80 miles above its confluence with the Tennessee River and about 7 miles below the mouth


ARCHAEOLOGICAL SURVEY
OF CLINCH & POWELL RIVERS
SCALE
1 0 1 2 3 4 5 6 7
MILES
LEGEND
● EXCAVATED SITE
⊗ STONE MOUND GROUP
○ TOWNS & VILLAGES
ANDERSONVILLE
UNION COUNTY
ANDERSON COUNTY
KNOX COUNTY
CLAIBORNE COUNTY
CAMPBELL COUNTY
CLINCH
CANE CR.
OFFUTT
RIVER
CLINTON
SITE 16
SITE 15
SITE 23
SITE 17
EDGEMORE
SITE 19
LA FOLLETTE
SCARBORO
SITE 21
SITE 22
SPEEDWELL
DAVIS CREEK
SITE 10
SITE 20
SITE 18
SITE 4
SITE 9
CEDAR CR.
JACKSBORO
SITE 3
SITE 1
SITE 2
SITE 5
CARYVILLE
BIG CREEK
SITE 12
SITE 13
SITE 6
SITE 7
SITE 8
LOYSTON
CAMPBELL COUNTY
UNION COUNTY
ANDERSON COUNTY
COAL CREEK
COAL CR.
SITE 14
NORRIS DAM SITE
UNION COUNTY
ANDERSON
LOST CREEK
CLINCH
POWELL
RIVER
ARTHUR
NEW TAZEWELL
TAZEWELL
CLAIBORNE COUNTY
HANCOCK COUNTY
BIG BARREN
UNION COUNTY
SITE 11
RIVER
HANCOCK COUNTY
UNION COUNTY
GRAINGER COUNTY
MAYNARDVILLE
1050



TENNESSEE VALLEY
AND ADJACENT TERRITORY

WEST VIRGINIA
KENTUCKY
VIRGINIA
TENNESSEE
NORTH CAROLINA
SOUTH CAROLINA
GEORGIA
ALABAMA
MISSISSIPPI
OHIO RIVER
RIVER
CUMBERLAND
NASHVILLE
POWELL
CLINCH
RIVER
HOLSTON
NORRIS DAM
Dondridge
FRENCH
NOLICHUCKY
BROAD
RIVER
KNOXVILLE
CLINCH
Bussell's Island
RIVER
LITTLE
Sellico
Toqua
TENNESSEE
TELLICO R.
RIVER
Hiwassee Island
HIWASSEE
RIVER
CHATTANOOGA
Nacoochee
TENNESSEE
RIVER
DUCK
RIVER
RIVER
ELK
SAVANNAH
PICKWICK DAM
FLORENCE
WILSON DAM
WHEELER DAM
HUNTSVILLE
TENNESSEE
SCALE
10 0 10 20 30 40 50
MILES

of the Powell River. When finished, it will be about 265 feet high. The top of the dam will be 1,060 feet above sea level; and, by impounding the water of Clinch River and its tributaries, it will create Norris Lake, raising the water level to the 1,020-foot contour. This impoundment will flood Clinch River for some 72 miles, Powell River for 56 miles, as well as many other lesser streams, such as Big Creek and Cove Creek. Norris Lake will have an area of about 53 square miles, and a shore line some 705 miles in length. The area thus flooded, under the 1,020-foot contour, following the Clinch River and its tributaries, constitutes the Norris Basin. This basin lies in Anderson, Campbell, Union, and Claiborne Counties, Tenn. Its exact location in the Tennessee Valley is shown on map 1, a map of the drainage area of the Tennessee River. The extent and conformation of Norris Basin are shown on map 2.

Survey of Norris Basin

The archaeological survey of this basin had for its major objectives:

1. The discovery of all prehistoric sites within the basin.
2. The excavation of all of the important sites found.
3. The recovery and preservation of all information and material of archaeological value.

The first of these objectives implied that a thorough search be made of the entire area from the 1,020-foot contour down to the present edge of the river, locating every evidence of prehistoric occupation. Such sites, when located, were to be plotted on a map of the basin. The second and third of these objectives made necessary the excavation of key sites, using such techniques as would conserve a maximum of the remaining evidences of the cultures of the prehistoric inhabitants. Besides conserving the material remains of the prehistoric peoples, it was necessary, in addition, to make use of all other available means in order that such information as could not be preserved in material form might not be lost. To that end a survey of each site was made as excavation proceeded. A system of field notes, covering all phases of the excavation, was carefully kept. These field notes were supplemented by many drawings made in the field. By a diligent use of photography, an attempt was made to produce a complete, accurate, and permanent record of every feature as it was discovered.

The Physiography of the Norris Basin

The great valley of East Tennessee lies in the physiographic division of North America known as the Appalachian Province. The great valley is a part of the Appalachian Valley, which extends from Virginia into Alabama.

The region west of Walden Ridge and northwest of Cumberland Mountain lies in the Cumberland Plateau province. This area is sharply demarcated from the valley by the eastward facing Walden Ridge and Cumberland Mountain, designated the Alleghany front. The Appalachian Valley shows a uniform increase in altitude from 500 feet or less in Alabama to 900 feet in the vicinity of Chattanooga, to 2,000 feet at the Tennessee-Virginia line, and 2,600–2,700 feet at its culminating point on the divide between the New and Tennessee Rivers.

The drainage of the valley region is quite diverse. The Powell and Clinch Rivers, flowing into the Tennessee River, form the major streams of the area. The streams fall from an elevation of 900–1,100 feet at the valley border to 780 feet at Blacks Ford on the Clinch. All the larger streams are sunk in sharp, narrow troughs 100–500 feet below the adjacent country. Most of the surface of the smaller valleys stands at an altitude of 900–1,100 feet. Above this various ridges project from 100 to 500 feet.

The formations exposed in the valley region are all Paleozoic in age. They have all been disturbed from the horizontal position in which they were deposited. Close folding and faulting due to tangential pressure from the southeast has produced the long straight folds, which are almost universally overturned with faults occurring on the northwest side of the anticline. Some faults are continuous for over 300 miles, while the folds are even longer.

The long, narrow ridges and valleys of the Tennessee Valley were brought into their present attitude by a series of diastrophic and erosional events. During the Paleozoic the region was intermittently submerged by marine waters, and with the change of the various kinds of sediments the formations were laid down.

At the end of the Paleozoic in the Appalachian revolution the strata were folded and faulted, forming an ancestorial Appalachian Mountain system. During the Mesozoic era these mountains were base-leveled and the present drainage system established. A series of uplifts aggregating several thousand feet rejuvenated the area. Differential erosion has produced the present long ridges and valleys, the ridges being maintained by the more resistant strata, while the valleys are developed on the weaker shales and limestones.

Of geologic as well as historical interest is Cumberland Gap, in the vicinity of Middlesboro, Ky., a cleft in Cumberland Mountain standing about 1,000 feet below the ridge tops. This gap offered a convenient pass for pioneers into the region of the west. The gap was once occupied by a southeastward-flowing tributary of the Powell River. Capture of the headwaters of this stream by Cumberland River diverted the waters to the north. Subsequent erosion lowered the land on both sides of the gap, leaving this remnant of a former valley some 500–600 feet above the present-day drainage.

Acknowledgments

It is impossible to mention by name all persons who by their kindness and cooperation rendered valuable assistance to the survey. Interest in this undertaking was quite general among all property owners within the Basin. Grateful acknowledgment is made to all property owners who kindly permitted the excavation of sites on their lands. The following is a list of persons to whom such acknowledgment is due:

Mr. John L. Ausmus, Speedwell.
Mr. F. Howard Bowman, La Follette.
Mr. A. B. Cox, Edgemoor.
Mr. Sam Crawford, Scarboro.
Mr. W. A. Freel, Scarboro.
Mr. J. M. Hetherley, La Follette.
Mrs. Mandy Harris, La Follette.
Mr. Harvey Hill, Loyston.
Mr. M. N. Irvin, La Follette.
Mr. C. R. Lea, Clinton.
Mr. Jim McCarty, La Follette.
Mr. Stoke Meredith, La Follette.
Mr. W. S. Moneymaker, Edgemoor.
Mr. Wiley Richardson, Agee.
Mr. H. Clay Stiner, Stiner.
Dr. Sam Taylor, Clinton.
Judge J. H. Wallace, Clinton.
Mr. C. J. Walters, Maynardville.
Mr. Isaac Wilson, Loyston.

Grateful acknowledgment is made to the National Research Council, which, through Dr. Albert W. Poffenberger, chairman of the Division of Anthropology and Psychology, made a grant in aid of this research. This fund played a very important part in supplementing Federal appropriations in this emergency. The restrictions necessary for the expenditure of Federal funds often prevent or delay minor expenditures beyond the point of greatest efficiency. This grant of the National Research Council was very necessary in the coordination of the expenditures of the Civil Works Administration funds for labor and the Tennessee Valley Authority funds for administration. Its immediate availability greatly expedited the setting up of the organization for field work.

The assistance of Dr. Carl E. Guthe, chairman of the Committee on State Archaeological Surveys of the National Research Council, and Mr. Neil M. Judd, curator of archaeology of the National Museum, is greatly appreciated. Both of these gentlemen gave generously of their time and advice in locating a competent supervisory staff and in formulating plans for the initiation of the survey.

Acknowledgment is made of the valuable services rendered by Dr. W. D. Funkhouser, dean of the Graduate School and professor of anthropology of the University of Kentucky, who made a study of the physical anthropology and pathology of the skeletons from the Norris Basin. The results of his study are included as a valuable addition to this report.

Acknowledgment is made of the proficient manner in which Dr. James B. Griffin, of the University of Michigan, has undertaken a study of the potsherds from the Norris Basin. Dr. Griffin made a trip to the University of Tennessee for a hasty survey of the material from the basin, and has spent several months working over the large number of sample sherds which were sent to the ceramic repository of the University of Michigan. He has made a comprehensive study of this material and his report, as published herein, contains a wealth of information relative to the ceramic arts of the prehistoric peoples of the Norris Basin.

Perhaps the outstanding accomplishment during the survey was the demonstration, by Dr. Florence M. Hawley, that the science of dendrochronology can be applied to the trees of southeastern United States. Dr. Hawley made a 2 weeks' study of growing trees in the Norris Basin in the spring of 1934. As a result of that study she concluded that it would be possible to set up a dendrochronological chart for this area if a sufficient number of tree samples could be found. Due to the painstaking effort of Mr. Clarence C. Prosise, foreman in the Basin Clearance Section of the Tennessee Valley Authority, growing cedar trees were found which had some six hundred rings or more. Dr. Hawley has continued her study at the University of New Mexico and has made progress in developing a dendrochronological chart for this region.

It is a pleasure to make grateful acknowledgment of this advance in southeastern archaeology. Her report on the progress of this work is included in this survey and represents the first attempt in the southeastern United States to aid the study of prehistory by this method.

In every archaeological survey in which the preservation of information is a major objective, efficient field photography is a first consideration. The author desires to express his appreciation of the excellent service of Mr. E. E. Newkom and Mr. Granville Hunt, of the Tennessee Valley Authority photographic staff, who by their ability and industry procured many excellent pictures of the field work in progress. The author also desires to express his gratitude to Mr. M. G. Thompson and Mr. B. N. Glenn for their prompt and careful handling of the photographic work of this survey in the

Tennessee Valley Authority photographic laboratories. All of these gentlemen, by their interest and uniform courtesy, greatly expedited the work of the survey and rendered a service as pleasant as it was efficient.

The success of an archaeological survey begun in midwinter, covering intensely so large an area, and carried on by the use of unskilled labor from the Civil Works Administration and Federal Emergency Relief Administration rolls, demanded a maximum of careful and able supervision. This was provided by one district supervisor, Mr. T. M. N. Lewis, and eight field party supervisors.

Mr. Lewis was selected for this work because of his ability and his known interest in such problems. He undertook this work without the aid of a preliminary survey of the archaeological remains of the region. In the face of many physical handicaps, he initiated both the survey and the work of excavation and carried them to a successful conclusion. The region under investigation was rugged; the roads very poor. In addition, work was begun in the middle of the winter and was continued in spite of snow and zero weather, in the winter months, and excessive rains and river floods in the spring. Mr. Lewis has also made contributions to this report by his assistance in the study and restoration of the material recovered from the basin.

The field party supervisors were, in the main, young college men trained in archaeology and having experience in field work. They were drawn from university and museum work to meet this emergency. They demonstrated their ability to get excellent results and, in the face of many difficulties, not the least of which was the use of unskilled labor and a constantly changing personnel, they successfully carried out many difficult explorations. Too much credit cannot be given them for their tireless energy and painstaking care. The following list of field party supervisors shows the sites on which each labored:

Supervisors	*Sites on which they worked*
Goslin, Robert	1, 2, 3, 4, 7, 9, 14, 17.
Haag, William G	8, 11, 13, 17, 18, 23.
Sullivan, H. M	2, 3, 5, 9, 12, 15, 16, 19.
Taylor, A. P	2, 3, 5, 12, 15, 16, 19, 22, 23.
Walker, Wendell C	10, 20, 21.
Wilder, Charles G	10, 20, 21.

During the early part of the work under C. W. A., Messrs. George D. Barnes and A. E. Wilkie were employed as field party supervisors.

LIST OF SITES

The 23 sites showing evidence of prehistoric occupation reported in this survey are listed below in numerical order. Their location is indicated on the map of Norris Basin, each site being designated by number assigned.

Site no.	*Description*	*Owner*
1.	Stone mounds	J. M. Hetherley.
2.	Bowman mounds	F. H. Bowman.
3.	Saltpeter cave	Stoke Meredith.
4.	McCarty mounds	Jim McCarty.
5.	Caryville site	M. N. Irvin.
6.	Hill stone mounds	Harvey Hill.
7.	Wilson mound	Isaac Wilson.
8.	Richardson mound	Wiley Richardson
9.	Harris mound	Mrs. Mandy Harris.
10.	Ausmus mounds	John L. Ausmus.
11.	Walters village	C. J. Walters.
12.	Wallace cave	Judge J. H. Wallace.
13.	Bullock cave	Roy Alexander.
14.	Hawkins cave	Federal property.
15.	Johnson cemetery	J. B. Johnson.
16.	Taylor mound	Dr. Sam Taylor.
17.	Lea mound and village	C. R. Lea.
18.	Stone mounds	H. Clay Stiner.
19.	Burial mound	A. B. Cox.
20.	Burial cave	John L. Ausmus.
21.	Crawford mounds	Sam Crawford.
22.	Freel mound	W. A. Freel.
23.	Doan cave	William and Robert Doan.

NOTE ON TECHNIQUE OF EXCAVATION AND THE INTERPRETATION OF DRAWINGS

In the excavation of all mounds reported in this survey a uniform method of survey and designation was used. When surveyed, mounds were staked as indicated, either in 10-foot squares or in 5-foot squares, along the cardinal directions. The northeast stake is *always* designated as the zero stake. The squares are designated southward by integers and westward by decimals. In all drawings of staked areas shown in this report the stake lines have been omitted for the sake of clarity. However, one point is always designated for reference. By the use of the accompanying scale and the given reference point, it is always possible to reconstruct the coordinate system of stakes, superimposed on any excavated area.

In drawings of excavated areas, rectangular post-mold patterns of structures to be described in more detail elsewhere are reported by broken lines made up of long lines and dashes. Primary structures are indicated by one dash between the lines, while secondary structures are indicated by two dashes between the lines, etc. This is necessary because of multiple occupancy of single sites, upon which as many as eight structures have been found, one superimposed on another. The extent and form of all trenched areas is indicated by broken lines at the boundary.

SITE No. 1.—HETHERLEY STONE MOUNDS

This site is located on the J. M. Hetherley farm in close proximity to a place known locally as Shanghai Branch. It is situated about 500 yards to the right of the road leading from Demery, Campbell County, to the mouth of Cedar Creek.

Four stone mounds are located on the wooded south slope of a high hill within 100 feet of the crest. On the opposite side of the hill, some 700 or 800 yards distant, the Powell River flows. In all directions the terrain rises irregularly, and many springs and small creeks lie at the bottom of these hills. The high-water survey stakes indicate that the entire area will be included within the Norris Reservoir.

All four mounds were in alinement, approximately north and south. For purposes of reference they will be referred to as Mound No. 1, Mound No. 2, Mound No. 3, and Mound No. 4; Mound No. 1 being the southernmost and Mound No. 4 the northernmost. The periphery of Mound No. 1 was 4 feet from the periphery of Mound No. 2, Mound No. 3 was 15 feet from Mound No. 2, and Mound No. 4 was 56 feet from Mound No. 3. The diameters were, in order, 18 feet, 12 feet, 12 feet, and 14 feet.

All four mounds were round in configuration and their heights were, in order, 2.5 feet, 2 feet, 1.5 feet, and 1.75 feet. Each mound contained about an equal amount of rudimentary stone, which varied in size from 3 inches thick and 1 foot square to small stones.

Test trenches made in Mounds No. 1, No. 3, and No. 4 revealed that these mounds had been previously disturbed by marauders. No trace of burials was found in Mound No. 4, but a few fractured human bones were discovered in Mound No. 1 and Mound No. 3.

Upon removing about a foot of stone and soil from Mound No. 2, a burial was found. This skeleton was in a partially flexed position. Due to the extremely moist condition of the soil, it was decided to remove the stone and soil surrounding the burial to a depth of 3 feet, which operation uncovered two additional fully extended burials directly beneath the upper one. The three burials had the same orientation, namely, heads to the northeast and faces to the right.

Unfortunately it was not possible to determine the exact deposition of the burials, inasmuch as the moist condition of the soil and darkness prevented further removal of dirt. Upon returning the following morning, the party found that all these burials had been removed and borne away during the night by young men living in the vicinity. This loss was much to be regretted, since a complete excavation of the mound yielded nothing further, either in materials or information.

Site No. 2.—BOWMAN FARM MOUNDS

The Howard Bowman farm at Agee, Campbell County, Tenn., lies in Catham Bend of Powell River, about 4 miles upstream from its junction with Clinch River. This great bend in the river is about 1½ miles long, north to south, and a mile wide, east to west. Here the Powell River flows northward on the east side and swings westward to flow southeast on the west side of the farm. The area thus nearly surrounded by the river is a rolling plateau sloping gradually to the river level. Outside of the "bend", rocky hills covered with sparse growth of timber rise some 300 feet above the river. The topography here probably was a deciding factor in influencing prehistoric man to select Catham Bend as the site for a village. The plateau is on the 960-foot contour, and the waters of Norris Lake will cover it to a depth of 60 feet.

The farm, shown in plate 2, *a*, has long been in cultivation. The area under excavation is to be seen in the center of the picture. The soil, which is a heavy red clay loam mixed with sand, is fairly fertile. It is easily displaced by flowing water, however, and erosion has already removed the top soil from part of the area, leaving in places barren gullies.

The crest of a low-lying ridge which constitutes the center of this area in a field of about 25 acres had been plowed in the fall of 1933 in preparation for spring planting. There was, thus, very little surface evidence of prehistoric occupation visible on the site. The most noticeable feature was an elongated ridge of earth, some 150 by 100 feet, and about 10 feet high, having a general northeast-southwest direction. Investigation revealed that this ridge had been formed by the erosion of two closely associated mounds, each nearly circular, one much larger than the other. Trenching outside the mound area revealed a village site covering several acres adjacent to the mound. The long cultivation of this gently sloping plateau and the gradual erosion of the top soil had almost obliterated all trace of the village. All that remained were scattered post molds in the subsoil, fireplaces, and piles of pebbles below the plow line.

Particular attention is given to areas designated as A, B, and D, because of the evidences of occupation which they offer. In area A a number of features were found which were particularly characteristic of this site. After the removal of the humus layer from the top of the hardpan, several areas thickly covered with ellipsoidal river pebbles were discovered. The pebbles, which were from 2 to 6 inches in diameter, were laid together to cover areas which were approximately circular in form and varied in diameter from 1 to 6 feet. Each of the piles of pebbles, composed of from 12 to 125 pieces, rested upon a layer of charcoal and ashes about 6 inches thick. Some of the stones seem to have been broken by the action of heat and were discolored on the under side. Since in the same area scattered post molds were found, the stone piles are believed to have been on the floors of a structure.

While these stone piles were associated with charcoal, it is difficult to believe that the areas were fireplaces. The earth beneath the stone and ashes did not show the effect of any considerable amount of heat, while adjacent areas at the same level which were not covered with stones did show discoloration and evidence of fire. In this area the several features may be described briefly as follows:

Feature No. 1.—This was a stone hearth with a semicircular line of stones, consisting of two large and eight small stones. A pit in the center contained charcoal and six potsherds. A series of post molds was found nearby. These molds had no definite regularity of position.

Feature No. 2.—This was a pile of stones which was found at a depth of 9 inches. It was 55 inches long by 47 inches wide, and contained about 125 small stones which were fractured by heat and were discolored on the under side.

Feature No. 3.—This feature consisted of 65 small stones resting upon a 6-inch layer of charcoal. The area was 42 inches by 32 inches. Some of these stones were fractured by heat and were discolored on the under side. On this pile a few potsherds were found.

Feature No. 4.—This feature was made up of approximately 30 stones, much larger in size than those in Features No. 2 and No. 3. The usual 6-inch layer of charcoal was found under the pile, and the stones showed fracture and discoloration. The area was 40 inches by 26 inches. It is believed that it was originally a circular area, but the eastern edge showed disturbance by plow.

In area D a similar stone-paved area was uncovered.

Feature No. 1.—This area was made up of 50 large and about 50 small stones arranged in a crescent-shaped pattern which was 58 inches in maximum length and 30 inches in maximum breadth. This stone pile rested on the hardpan at a depth of 9 inches. Ashes were scattered between the stones, but there was very little charcoal under them.

Since these areas were selected at random for investigation, it is quite probable that there were many such paved areas in the old village site. Their purpose is conjectural. While they were certainly associated with evidences of fire, they do not appear to have been fireplaces.

In area B of the plat the subsoil showed a large number of post molds which seemed to fall into two groups, as shown in figure 1. The westward group, photographed in plate 3, *a*, revealed an irregular arrangement. The eastward group, shown in plate 3, *b*, seems definitely to indicate a post-mold pattern of a rectangular structure. These molds, which formed rows indicating the walls of a structure, were generally from 3 to 5 inches in diameter. A few of the molds in the interior of the structure were as large as 20 inches in diameter. A dark area following the line of post molds seems to indicate that in seating the posts for the wall a trench had been dug and the bases of the posts set in it in approximately straight lines and at the proper depth. The surface earth, darker in color than the hardpan, was then filled in about the base of the posts, leaving the line of the trench clearly indicated in contrast with the undisturbed subsoil. The form of these trenches is indicated in figure 1.

Mound No. 1

This mound was approximately circular in form and about 90 feet in diameter and 10 feet high at the center. It rested on a very definite humus layer varying from 1 to 2 feet in thickness, the greatest thickness being on the west side. Below this humus there was a heavy yellow clay subsoil. The mound had been erected of yellow clay and red clay and deposited in pockets or spread in small oval layers. The color contrast was so great that it was possible in some cases to identify the individual loads of earth which had been deposited by the builders. Pockets of black humus occurred at intervals throughout the mound which seemed to indicate that a load of topsoil occasionally had been dumped with the clay. Both yellow and red clays are available in quantities in nearby outcrops. Any vertical face cut in this mound thus showed stratification of red, yellow, or black lenticular layers of varying thickness throughout.

The mound was staked in 10-foot squares, as shown in figure 2, 70 feet eastward and 90 feet north-south. On the north side the tier bounded by stakes 0.0–0.7—1.7–1.0 was sliced down evenly to a depth of several inches below the humus line underlying the floor of the mound. Under the limitations attaching to the use of Civil Works Administration labor, it was necessary to employ approximately 40 men at this site. For this reason, excavation was started

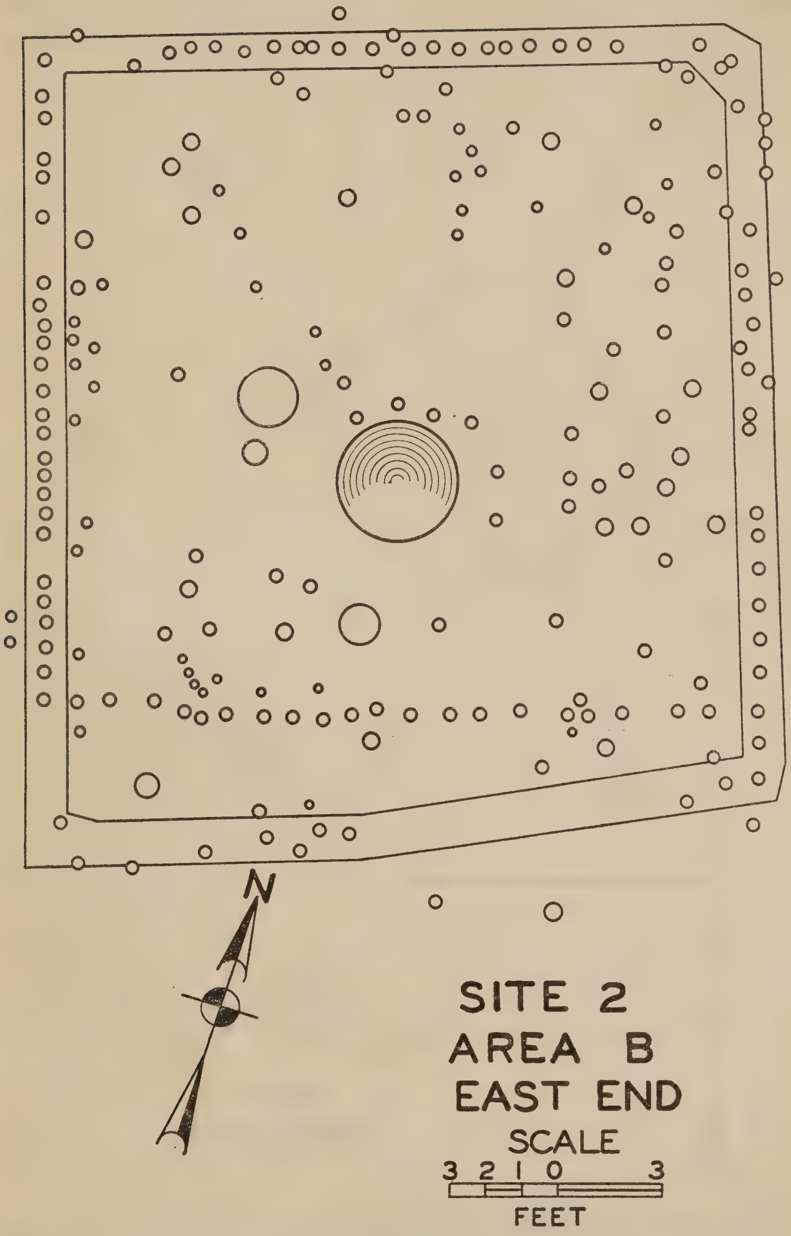

N
SITE 2
AREA B
EAST END
SCALE
3 2 1 0 3
FEET

FIGURE 1.

simultaneously on the south side of the mound also, in the tier bordered by 8.0–8.7—9.7–9.0. Each 10-foot section was cut down horizontally to the floor line, and each vertical wall as it was exposed

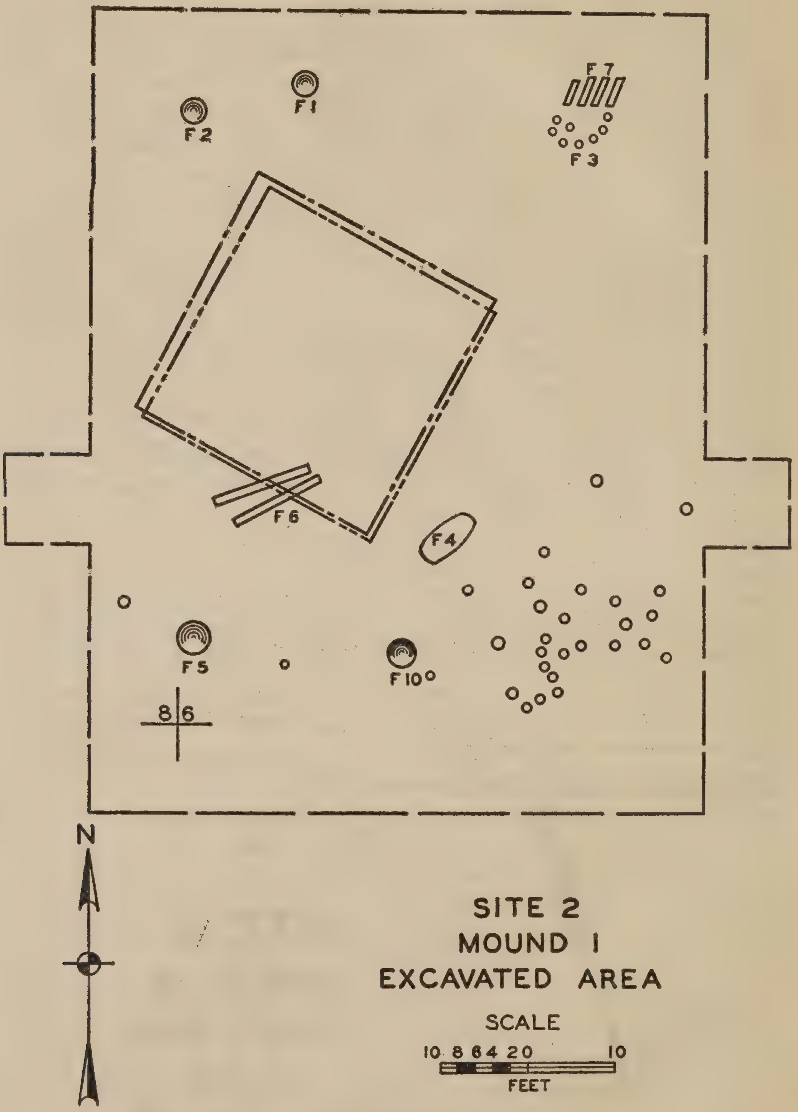

F 7
F 1
F 2
F 3
F 6
F 4
F 5
F 10
8 6
N
SITE 2
MOUND I
EXCAVATED AREA
SCALE
10 8 6 4 2 0 10
FEET

Figure 2.

was carefully examined for stratification and possible floor levels as shown in plate 2, *b*. Figure 2 shows the location of the special features which were uncovered.

MOUND No. 2

Early in the excavation of the elongated elevation, which was the most prominent feature of this site, it was seen that its ridgelike appearance was due to the close association of a large circular mound and a smaller mound lying to the northeast. Erosion of the topsoil from the larger and higher mound had partially covered the smaller one. Excavation was begun on the smaller mound designated on the plat as Mound No. 2. This mound was made up of yellow and red clay intermixed. It rested on a humus layer 15 inches thick, the apex being 30 inches above the humus line. The mound covered a burned structure which had collapsed on the floor. This structure was composed of split cane and grass thatching which was attached to a network of small poles from 1 to 2 inches in diameter. These poles crossed each other at right angles about 1 foot apart and had evidently been lashed together to form a framework for the attachment of the split-cane and grass thatching. All of this material was carbonized by the action of fire. In some portions of the area material of this sort had been completely consumed by fire. Under the charred structure a few irregularly placed post molds were encountered on the floor. Excavations were extended in three directions from the center of this area, considerably beyond the area covered by the charred remains, in the hope of finding other post molds. None were encountered. If there had ever been a walled structure here the post molds were either so far removed from the burned region as to have been beyond the limits of excavation or they had been destroyed either by cultivation of the soil or the possible removal of parts of the structure by the builders of Mound No. 1. In the later excavation of Mound No. 1, several sections of burned poles about 2 inches in diameter and some 3 feet long were found 22 inches above the primary floor. In appearance they were similar to the material of Mound No. 2 and may indicate the partial disturbance of this structure when Mound No. 1 was erected. In the absence of any definite proof of a wall under Mound No. 2, this charred pole-cane-grass structure may be only a roof of an arbor supported on the posts irregularly placed, as indicated by the post molds.

Feature No. 1.—This was a shallow charcoal pit, circular in form and 2 feet in diameter, which was found on the primary floor. The location of this feature is shown in figure 2.

Feature No. 2.—This was another circular fireplace which is shown in plate 4, *a*. It was 3 feet in diameter and had in it 16 small stones irregularly placed. This fireplace contained charcoal to a depth of 8 inches, which is shown in the photograph, piled in two heaps as it was removed from the pit. This charcoal-filled basin was covered by a thick stratum of humus, which contained no observable midden material. Because of this layer of humus, the fireplace gave the impression of long antedating the building of the mound (fig. 2).

Feature No. 3.—This was another fireplace. It was 6 feet in diameter and contained ashes and charcoal to a depth of 14 inches. Other fireplaces on the original floor would seem to indicate that the mound was erected on the site of an ancient village (fig. 2).

Feature No. 4.—Near stake 6.3 and near the southeast corner of the secondary structure (fig. 2), some 2 feet above the primary floor, a section of bark approximately 6 feet by 2 feet was found. This bark had not been burned, but had decayed, leaving a dark stain on the sand.

Feature No. 5.—This circular fireplace, which was 3 feet in diameter and was covered with ashes and charcoal to a depth of 7 inches, is shown in figure 2. There were some stones in these ashes.

Feature No. 6.—On the southern edge of the secondary structure and within the mound the charred remains of several small logs were found. These seemed to have been partially burned elsewhere and incorporated in the earth of the mound at the time of its construction (fig. 2).

Feature No. 7.—Near stake 1.1 there were four or more short sections of logs, 2 feet to 3 feet in length. These were found 22 inches above the primary floor. They were charred and may have been portions of the burned structure from Mound No. 2 (fig. 2).

Features Nos. 8 and 9.—These were, respectively, the altar and clay seat on the primary floor. They are described in detail in connection with the structure with which they are associated.

Feature No. 10.—Southwest of stake 7.3 there was a circular fireplace 15 feet in diameter located in the hardpan beneath the mound and covered by 13 inches of black humus. Four stones were placed near the fireplace. Clay about the fireplace was hardened by fire action and was covered by scattered charcoal and ashes (fig. 2).

Several feet north of stake 4.6 and 4½ feet above the primary floor a series of post molds was encountered which clearly represented a secondary floor. Slicing was discontinued at this point and the portion of the mound above the secondary floor was removed in an attempt to ascertain the nature and extent of this secondary structure. A structure some 35 feet square was revealed. The ground plan and orientation of this structure are shown in figure 3. The circular area indicates a fire hearth which was nearly symmetrically located on the floor of the town house and slightly raised above the level of the floor. The rectangular area to the east of this hearth marks an area in the town-house floor discolored by fire and hardburned. It is possible that this excessive number of post molds may

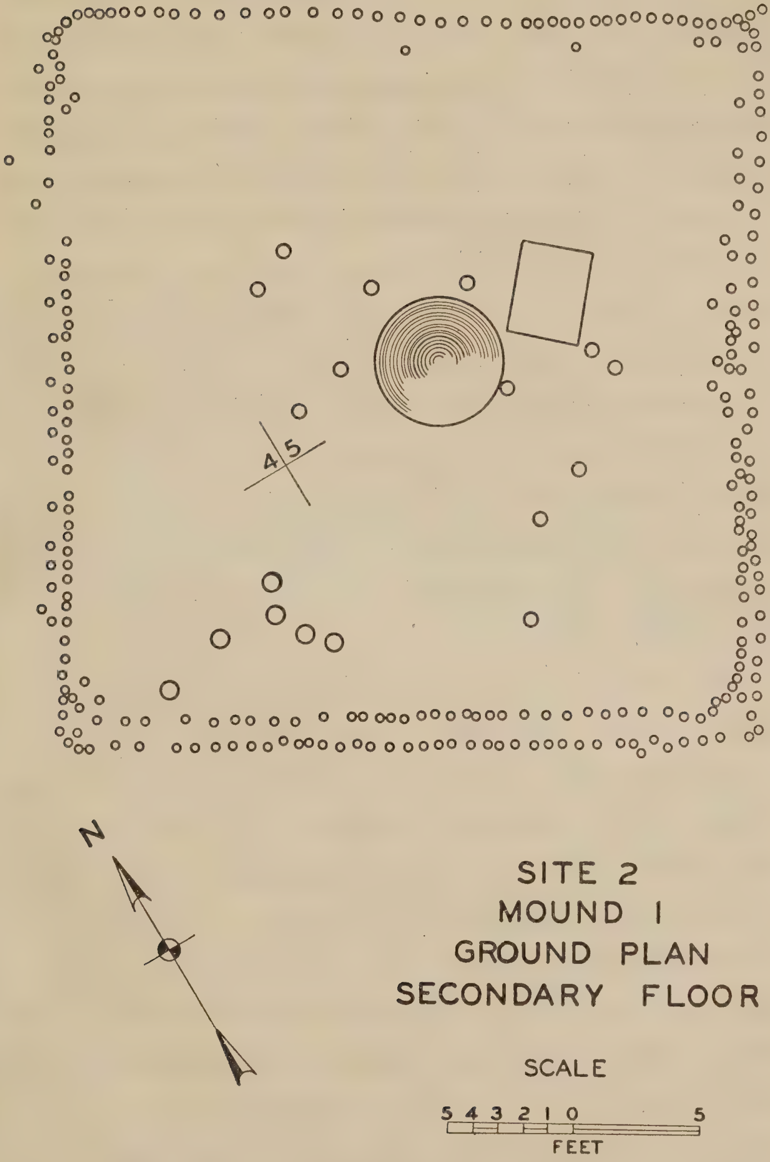

4
5
N
SITE 2
MOUND 1
GROUND PLAN
SECONDARY FLOOR
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 3.

be attributed to repairs made upon the town house after its deterioration due to age had made repairs desirable. From information gained on other sites it appears that attempts at such repairs were occasionally made with the evident purpose of prolonging the life of the town house.[2]

In order to ascertain if additional post molds existed to the east of this structure, the portion of the mound to the east of the structure was removed by slicing down to the primary floor. No molds were encountered on the secondary floor plane, but a few scattered molds were found on the primary floor in the southeast quadrant, as shown on the plat of the site (fig. 2).

The south side of the mound having already been sliced down to the 2.0–2.7 face, the remainder of the mound was then cut down in such a manner as to form four faces which alined themselves with the four walls of the secondary structure as shown in plate 5, *a*. This was done in order that the position of this secondary structure might be noted with respect to that of the primary floor. It was then found that there was a post-mold pattern on the primary floor. Careful investigation revealed that the orientation of these two systems of post molds was very nearly identical, and further, that the molds of the secondary floor were almost directly above those of the primary floor. It was surprising to find two structures of almost identical size, shape, and orientation, one superimposed upon the other. (Pl. 5, *b*.)

This change in the technique of excavation left as a residue a rectangular block approximately 35 feet square and 4½ feet thick. Plate 6 shows the arrangement of post molds on the surface of this residual block, after the surface of the secondary floor had been carefully exposed by troweling. This floor contained in the interior of the structure a number of scattered post molds of large size, which were probably made by the ends of beams used to support the roof. In the center of this pattern of post molds the floor was hard burned, indicating long-continued and very hot fires. No burned structure was found on the secondary level. The post molds on the primary level were all empty, but those on the secondary level, while easily discernible, were partially filled with black humus, due to the infiltration of surface earth.

The vertical walls of the residual block in the center of the mound were carefully studied for evidences of stratification. All four vertical faces bore lenticular striations, curving upward to all four corners, and seemingly indicative of the possibility that four primary mounds, one centered at each of the four corners of the primary floor, had been built. Horizontal striations on the faces between the curved striations seemed to indicate that in making the primary mound dirt had been added in level layers, and by this means the mound had been built up to the level of the secondary floor. The secondary floor was uniformly 4½ feet above the primary on all faces, but it sloped to the northwest slightly, as did the original humus layer at the base of the mound. After the secondary floor had been plotted and photographed, workmen were stationed around the outer edges of the vertical block of earth supporting the secondary floor and told to remove the earth in 1-foot stages. When shovels were forced into the earth just outside the line of post molds the striated yellow and red clay wall caved off vertically in enormous slabs from the top down to the level of the primary floor, leaving a grayish colored wall, as shown in plate 7, *a*. In other words, there appeared to be a vertical cleavage plane extending from the primary to the secondary floor on all four sides, and situated just beyond the post molds. A wedge (pl. 7, *b*) was cut into the southeast face of the vertical blocks in an endeavor to determine whether the cleavage line was formed by the settling of earth immediately over the remains of the burned structure, which was already making its appearance around the outer edges of the primary floor. The slanting faces of this wedge failed to show any striations whatever. The earth beyond the cleavage plane was darker in color and did not consist of a pure red-and-yellow clay as did that encountered outside the cleavage plane. Furthermore, there appeared to be no further indication of curved striations at the corners, nor were there any horizontal striations. It appeared that a cube of earth had been constructed over the primary floor. Following this, clay had been thrown up against this cube at the corners, thus presenting the appearance of four primary mounds beyond the cleavage plane.

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[2] See Sites Nos. 8, 11, and 17.

This condition might readily be attained if we may assume a wooden structure which had a heavy covering of earth on the roof. The great weight of the earth covering would have necessitated considerable bracing of the side walls of the building. This bracing was done by piling up earth at the four corners outside the walls. Thus small mounds, one at each corner, were formed by the earth piled up against the building. Each of these mounds, however, was in fact only three-fourths of a mound—the other quadrant being taken up by the corner of the building. When and if the roof supports rotted and the whole mass fell like a large square block and covered the floor below, these corner mounds would remain, and the walls of the building would be a vertical plane of cleavage between the central block of the mound, which was formerly on the roof, and the earth piled against the walls. It is believed that this is what happened in the construction of this mound. The reasonableness of this assumption will appear later, as the evidence from the other sites is presented.

After the investigation, the surface of this rectangular block was sliced down in 1-foot levels, as shown in plate 8. This process was continued until the level of the primary floor was reached. At this level a floor bounded by the post molds which had been noted previously was revealed. Covering the entire surface of the primary floor were the burned remains of a collapsed structure. Plate 9 shows a portion of this structure before it was removed from the floor. These burned remnants consisted of charred remains of logs, split cane, and grass thatching which had been attached to the log posts.

Plate 4, *b*, is a close-up showing the cane matting covering a fallen post. This matting, to which the grass thatching was attached, had been woven of split cane and bark. The removal of this fallen structure revealed a thoroughly prepared clay floor, upon which rested an altar and a clay seat. These two features were the only objects on or above the prepared clay floor. These were designated "Features No. 8 and No. 9", and are shown in figure 5.

Feature No. 8.—The fireplace or "altar" is shown in plate 132, *a*. It consisted of a nearly square clay platform 6 feet 10 inches in length and 6 feet 8 inches in width, raised 6 inches above the floor level. In the center of this platform was a pit, oblong in shape and running from the center of the altar to its western edge. This pit was filled with ashes to a depth of 33 inches. Near each corner of the altar was a circular concave depression which was very smooth on the interior surface. Each was 9 inches in diameter and nearly 2 inches deep, and was nonsymmetrically placed, as shown in figure 5. Resting on this altar was a soft clay bowl, 12 inches by 14 inches by 6½ inches on the outside and 4 inches in depth on the inside. It was unburned and quite soft, and when exposed to the air rapidly disintegrated.

Feature No. 9.—Against the southeast wall of the structure a clay seat of three steps was discovered (pl. 10). The seat faced northwest and was made of clay hardened by the action of fire. It was in line with the center of the structure. It was placed so closely against the southeast wall of the building that several of the posts of the southeast wall had been set in a portion of the lowest step which extended 14 inches behind the rear of the two upper steps, as shown in figure 4. In cutting down the clay between the primary and the secondary floor levels workmen damaged the surface of the seat before its nature was discovered. The damaged portion was restored and the seat was then photographed, as shown in plate 128, *a*. The dimensions and orientation of this feature are shown in figure 4.

The form of the structure closely approximated a true square, 35 feet on the side, with rounded corners, as shown in figure 5. When the structure was in process of construction trenches about 12 inches wide and 14 inches deep were dug in the floor where the walls were to be. These trenches were not carried to the corners but were carried to within 2 feet of the corners. Into these trenches the basal ends of saplings 4 or 5 inches in diameter were set. Along the trench and outside of the structure a horizontal log was laid at the bottom of the trench. On the inside of the building, on a level with the top of the trench, a second horizontal log was laid and lashed to the vertical posts. Figure 6 is a drawing indicating the essential elements of this type of construction.

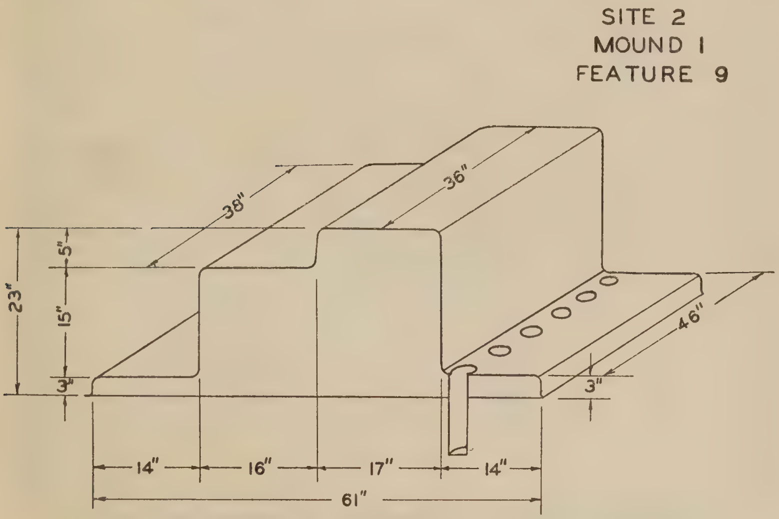


FIGURE 4.—Clay seat.

The trench was then filled with surface earth and a fresh layer of clay, some 6 inches thick, was carefully spread over the interior of the structure to form a smooth hard floor. The small end of each vertical post was then bent over toward the center of the building to meet a similarly situated post bent from the opposite side. The two ends of these posts were lashed together to form a continuous bow, extending from one side of the structure to the other. This process was carried on from all four sides until the corners were reached, which resulted in a double system of parallel logs over the center of the building, forming a square mesh about 1 foot wide each way. These crossed logs were tied together at certain places and over this structure split cane was spread and attached by twisted ropes of grass. Grass thatch was then applied and tied on with both twisted and plaited strings. Finally a covering of earth, perhaps 2 feet or more in thickness, was placed over the grass.

The corners of the building were closed by using much smaller poles, the basal ends being driven into the hard earth and the small ends leaned up against the structure to which they were attached. These poles were set in the arc of a circle at the corner, and being smaller than the posts used in the wall, and not set nearly so deep, their molds are easily distinguishable from the post molds of the side-wall logs. This gave to the structure the rounded appearance at the corners.

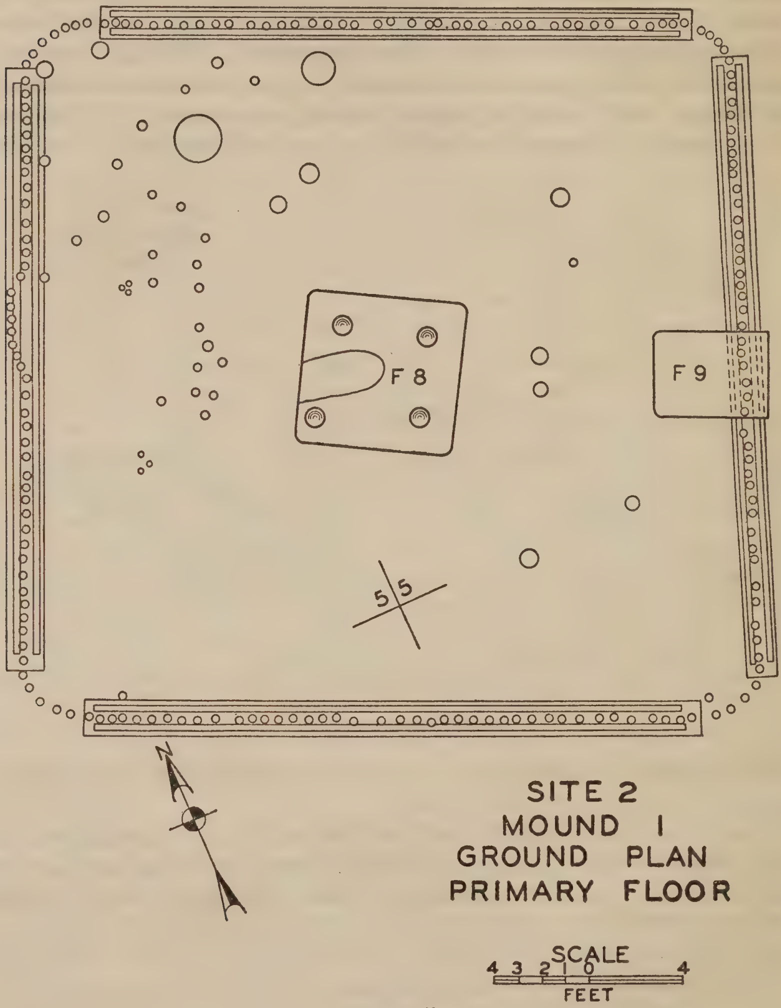


Figure 5.

The horizontal logs, placed as they were, one inside just below the clay floor, and the other outside at the bottom of the trench, about 20 inches below the floor, were admirably situated to give maximum stability to such a structure. When the structure was burned and fell, and later was covered over in order that another structure might be erected upon the site, the decay of these horizontal logs left horizontal molds in the trench which was filled with dark humus. The vertical post molds would therefore be most distinct at the level of the prepared clay floor. This was a fact and was easily observed. When the earth was cut away from the *outside* of the post molds, and the floor layer was removed from the *inside* of the building, the horizontal log mold was revealed against and immediately inside of the row of vertical molds.

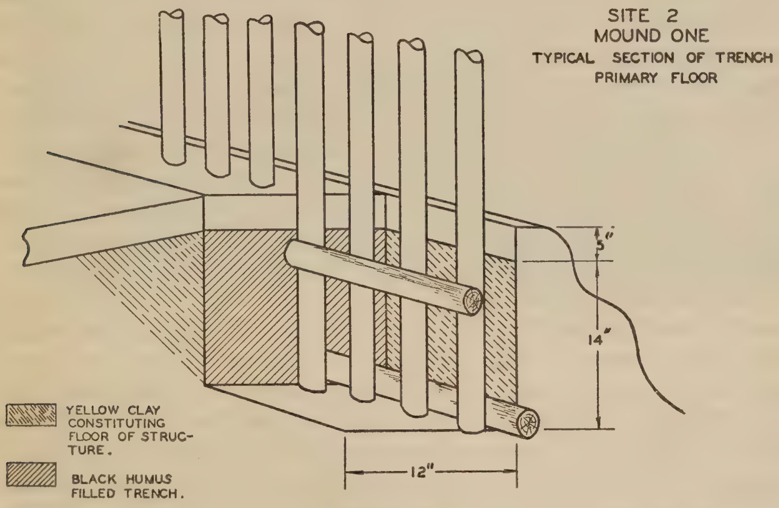

SITE 2
MOUND ONE
TYPICAL SECTION OF TRENCH
PRIMARY FLOOR
5"
14"
12"
YELLOW CLAY CONSTITUTING FLOOR OF STRUCTURE.
BLACK HUMUS FILLED TRENCH.

FIGURE 6.

There may be the suggestion of a doorway in the center of the southwest wall of the primary structure. At that point a slight outward curvature appeared for a distance of 4 or 5 feet. Just within the line of molds at this point a trench which had evidently been formed by the decay of a log laid horizontally and perhaps used as a threshold was found. However, it appears, from facts observed on other and seemingly related sites, that the doors to these "town houses" were quite small. In general they appear to have been little more than a mere crack in the wall, only large enough to allow a person to enter by squeezing through sidewise. These doors seem in most cases to have been in one corner; and, from the placement of the two larger and extra post molds just inside the trenches at the northwest corner, it is believed that the door of the primary structure was located at that point, rather than on the southwest wall.

The primary floor, which was covered by the fallen burned structure erected on it, showed the effect of fire, as did also the clay above and adjacent to the charred remains. This fact, together with the obvious fact that the charred remains did not suffer complete destruction by fire, definitely shows that the fire was smothered out. There was here no evidence of any plastering of clay on wattlework walls, so often reported elsewhere.

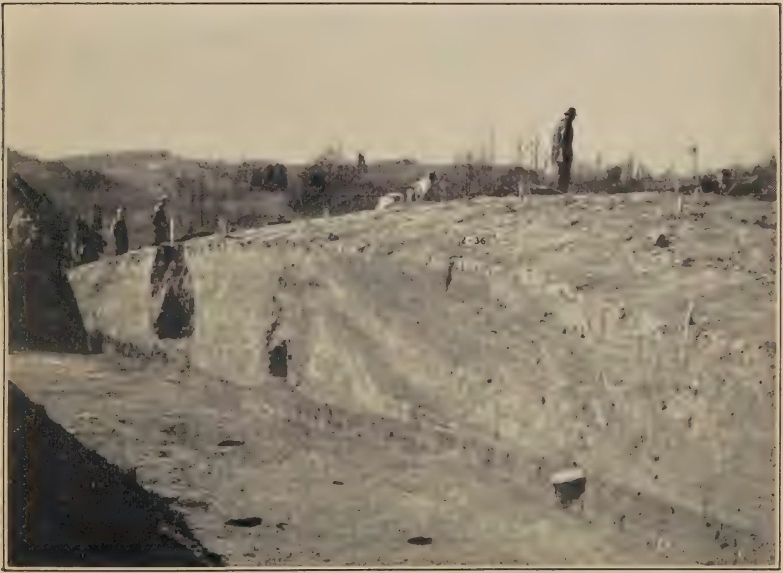
The finding of burned clay resting on top of the fallen structure very naturally raises the question of how the clay could be so burned while serving to smother out the fire. This smothering must have occurred since carbonaceous material so readily burned, as dead grass, split cane, and small dry poles, was not completely destroyed. One naturally wonders if, in case a wooden structure so constructed had been fired, it would have been humanly possible to have covered over such a burning structure with earth quickly enough to have produced the rather uniform partial burning observable over the whole primary floor, and at the same time to have allowed enough time for the heat of the fire to have discolored the covering clay. From the condition of the clay it is not believed that the building was covered over with fresh earth while it was burning, but rather that the structure, which was built of logs, split cane, and grass, had been covered with a considerable thickness of earth while it was standing. Under such conditions, when fired, it would have had an opportunity to burn over the whole interior slowly in an atmosphere deficient of oxygen, and finally, when it did collapse, the outside covering earth would have soon smothered out the fire. It would, itself, have been discolored by the burning which took place while the building was standing.

Notwithstanding the large amount of excavation and abundance of evidence of occupation, this site yielded very few artifacts. In the general digging, a small fragment of a steatite pipe and a fragment of a large biconcave discoidal were found. Other than a few crude hammerstones and flint chips, these were the only stone artifacts discovered.

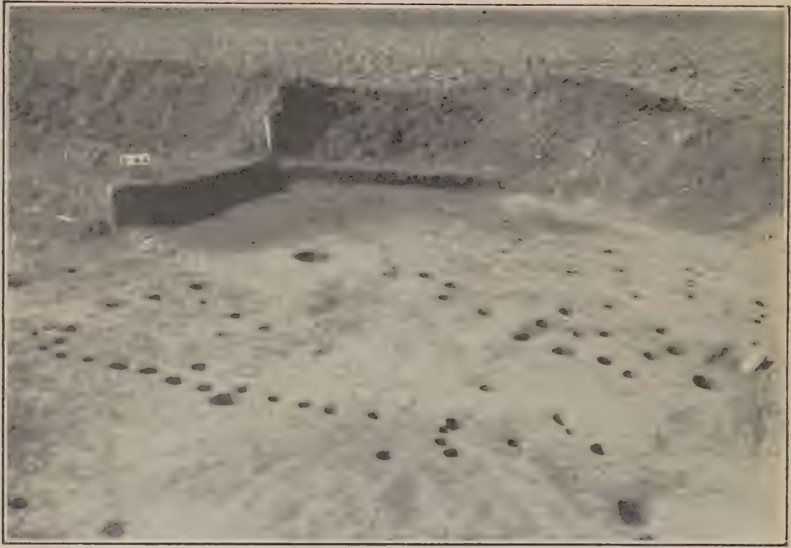
In the mounds there were scattered shells of snail and mussel. Many of these mussel shells were perforated in the center and showed evidence of use as hoe or scraper. It appears that they were used to scrape up the hard clay from its native deposit at the time of the construction of the mound, and by accident became incorporated in the mound.

Pottery from this mound was quite scarce. Even on areas which were definitely house sites, sherds occurred infrequently. All of

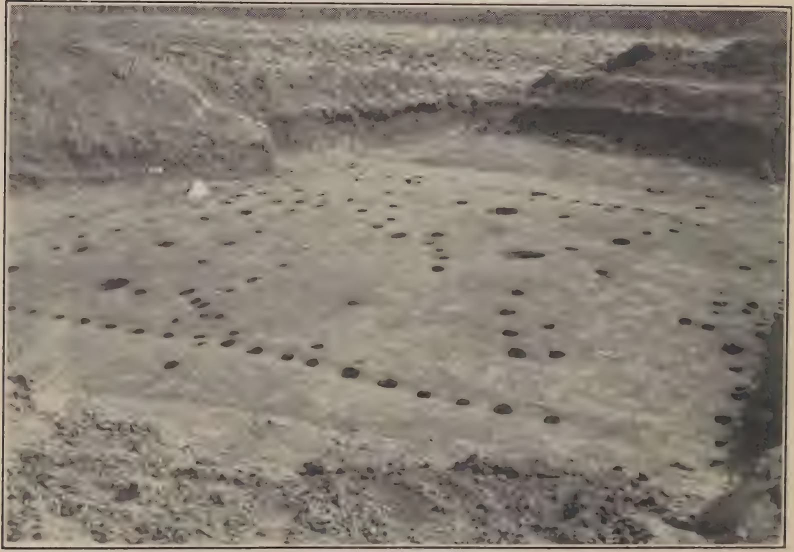
a. Bowman farm on Powell River. Site No. 2. (See mound excavation in center distance.)



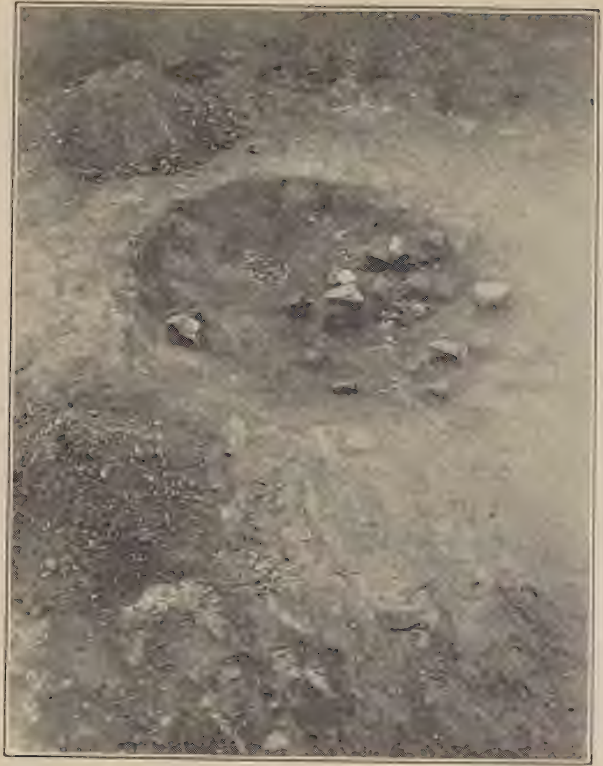
b. Profile 1.0–1.7, Mound No. 1, Site No. 2. (Note humus line and varicolored clay lines.)



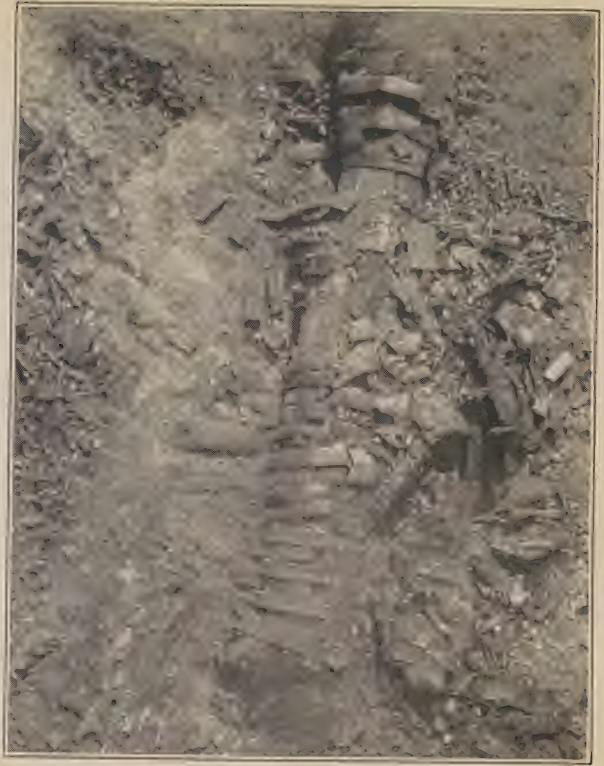
a. Scattered post molds in subsoil in village site. Site No. 2.



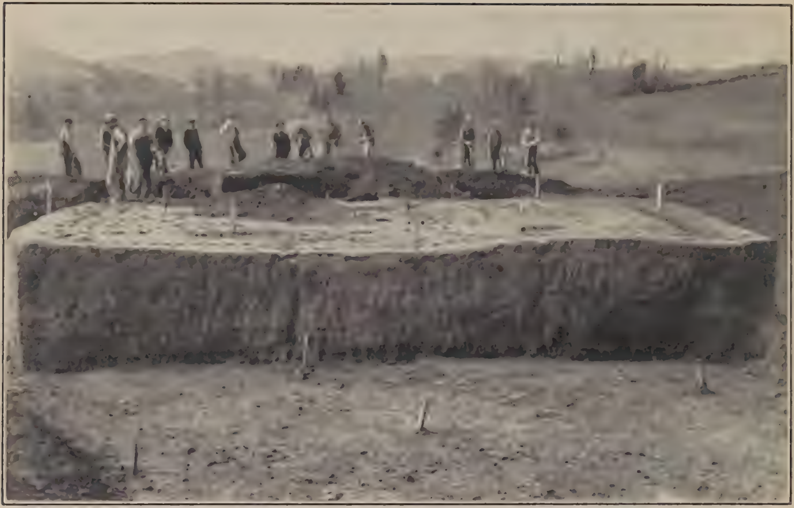
b. Post-mold pattern, showing rectangular structure, in village site. Site No. 2.



a. Fireplace. Feature No. 2, Mound No. 1, Site No. 2. (Note piles of ashes removed from basin.)

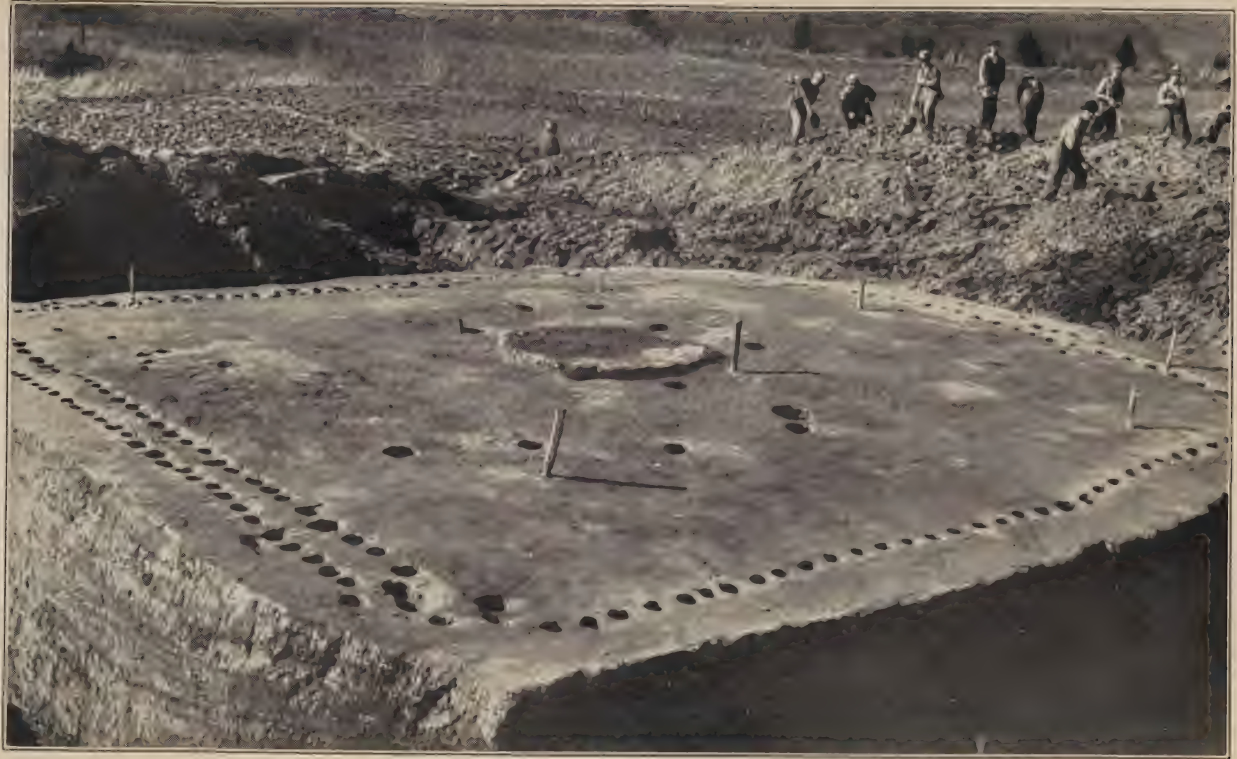


b. A close-up cf a fallen charred post showing split cane and bark matting covered by grass thatch. Mound No. 1, Site No. 2.

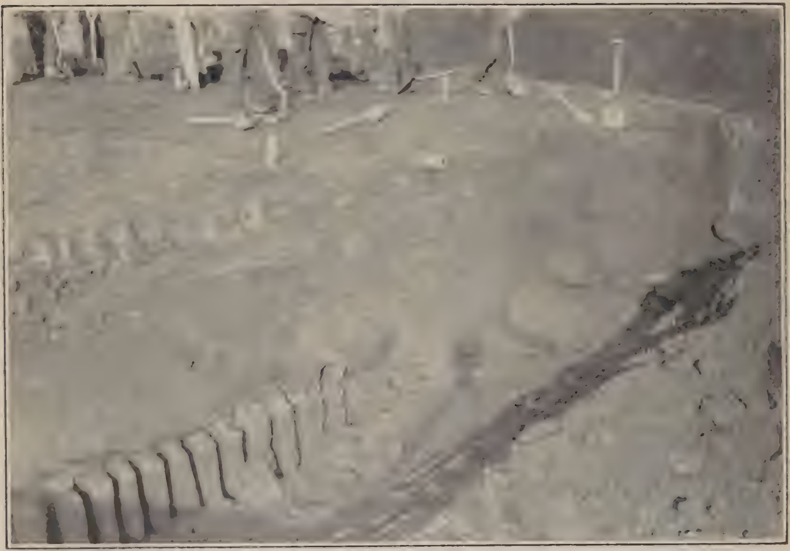


a. Central block cut down around secondary structure. Mound No. 1, Site No. 2.

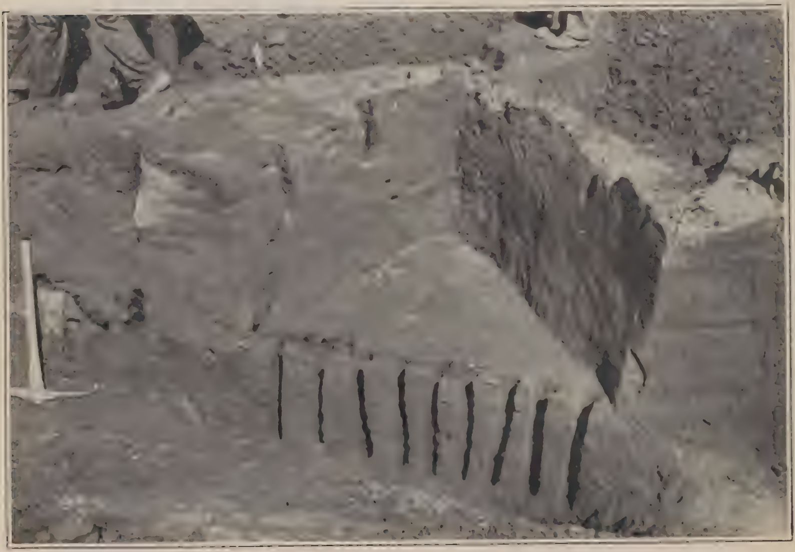
b. Central block of mound revealing post molds of primary structure in southwest corner. Mound No. 1, Site No. 2.



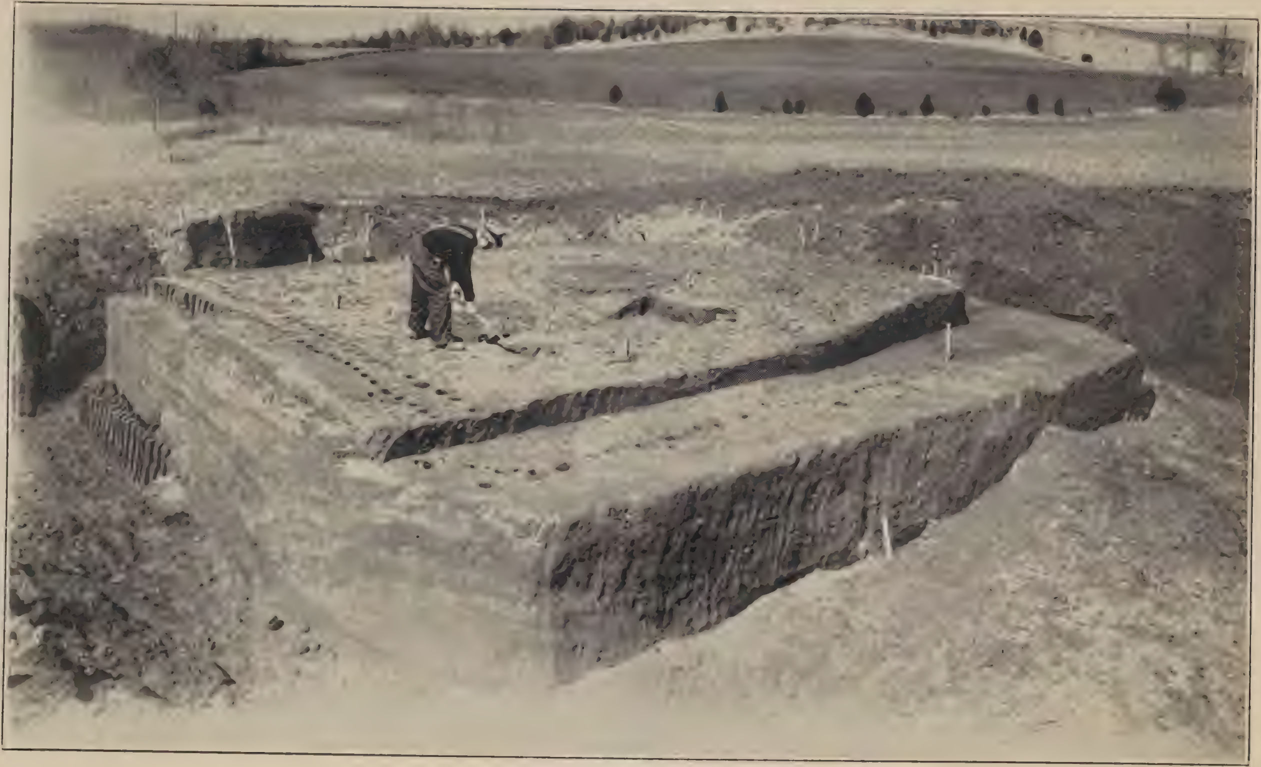
Secondary floor after careful troweling and sweeping. Actual floor surface was of hard, prepared clay. Mound No. 1, Site No. 2. (Note fireplace and interior post molds.)



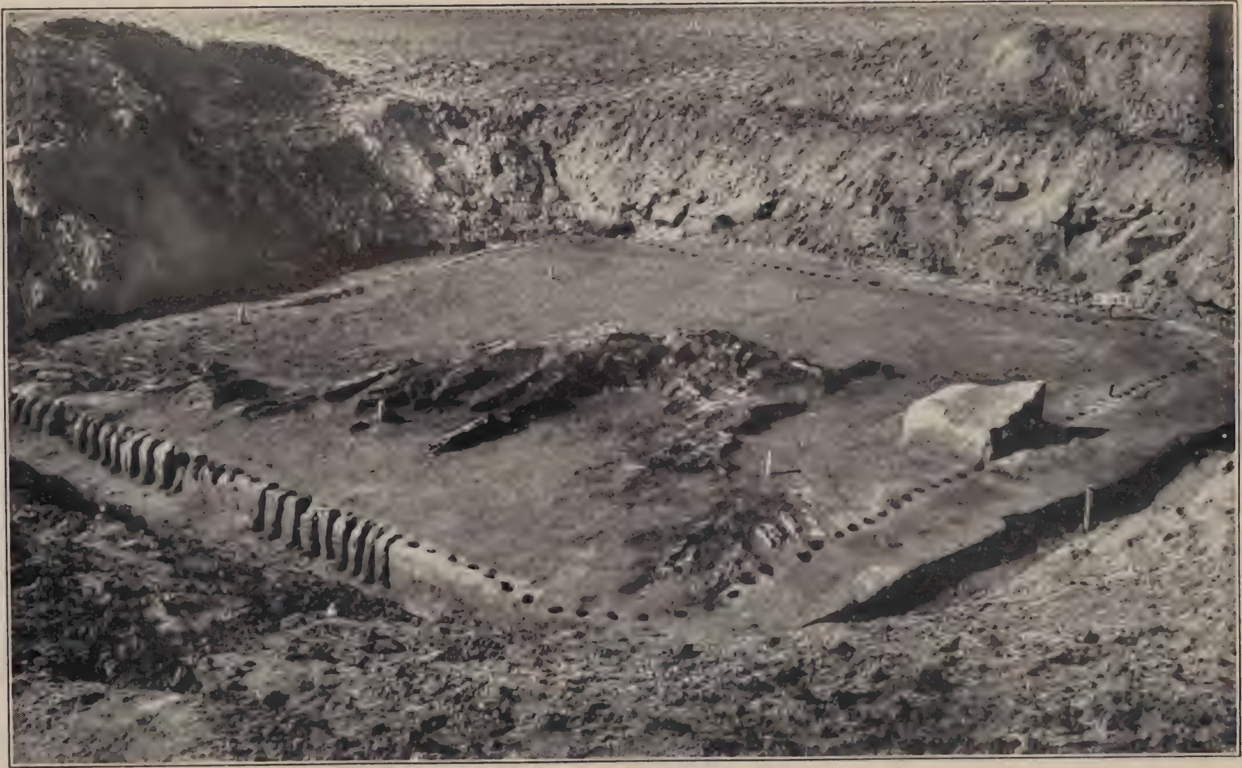
a. Vertical cleavage plane between earth inside structure and outside structure. Outside has split off nearly up to shovel standing vertically. Mound No. 1, Site No. 2.



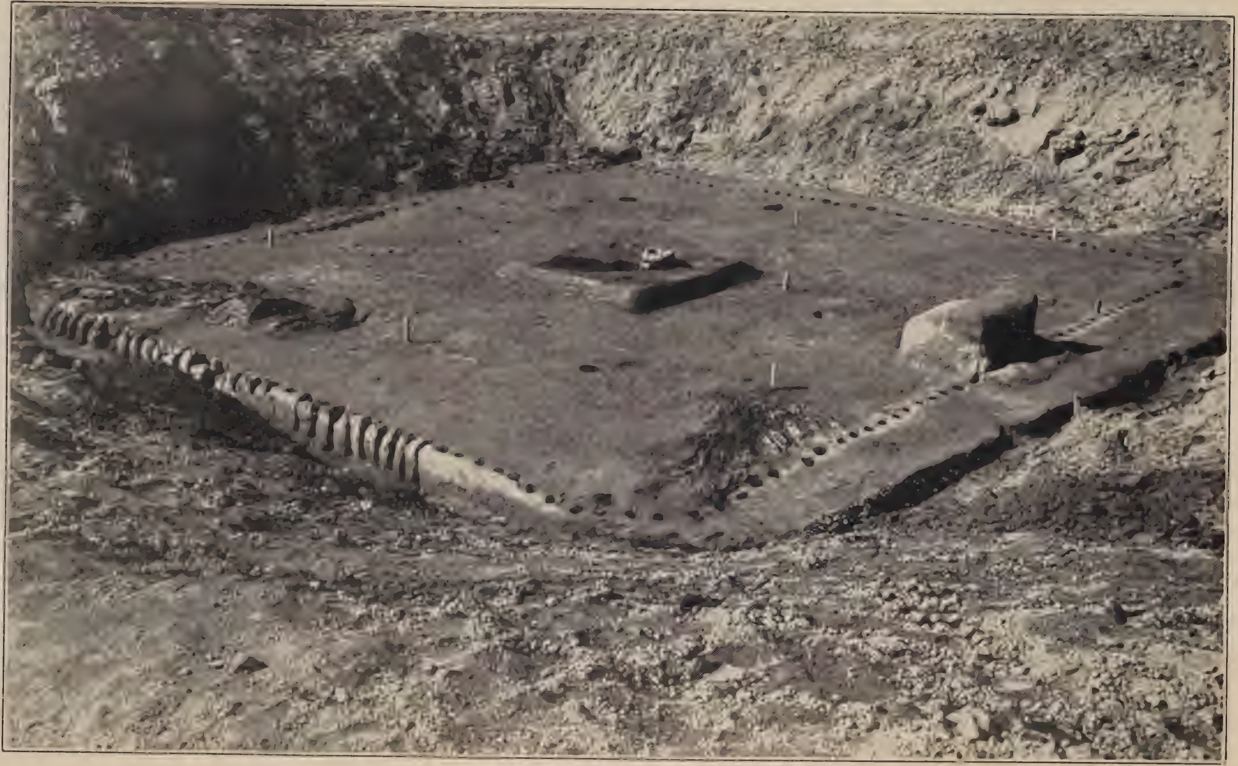
b. Wedge cut into southeast face to show cleavage planes on left. Mound No. 1, Site No. 2.



Central block cut down in 1-foot layers. Mound No. 1, Site No. 2.



Primary floor showing portion of burned structure undisturbed. Mound No. 1, Site No. 2.



Primary floor. Central altar cleared in fallen structure. Mound No. 1, Site No. 2.

these sherds were soft and crumbling and many were on the point of complete disintegration. This condition may point to a considerable age for the site, or it may indicate a soil particularly active chemically. From the nature of the sherds found one would not suspect that their present condition could be attributed to the poor quality of the original product. The sherds found seemed to indicate only large vessels of utility of coarse texture. There was no evidence of tempering other than shell. Plain ware, textile impressed, and grass-paddled sherds were about equally distributed. The only other form of exterior decoration consisted of handles. All handles were round in cross section and had an extension above the rim.

No burials were found in this site, although there was a local history of skeletons having been plowed up in this field some 10 years prior to this investigation.

Conclusion

Site No. 2 seems to have been a village of sufficient importance to warrant the erection of a town house in its midst. Town houses were earth-covered, and when the first town house was destroyed by fire a second was erected on the same spot. A village had existed at this location prior to the erection of a town house.

Where post-mold patterns were discernible such patterns were rectangular in both town houses and dwelling houses in the village. There is no positive evidence that dwelling houses were earth-covered. The opinion is expressed that the mound was formed solely by the collapse of earth-covered town houses erected in succession on the same spot.

Site No. 3.—SALTPETER CAVE

This cave, which was located on the land of Mr. Stoke Meredith, was 11 miles east of La Follette, in Campbell County, Tenn. It was 2 miles west of Powell River and about 5 miles up the river from its mouth. About 50 yards from the entrance to the cave there was a spring which might have been used by the prehistoric inhabitants of the site.

The cave faces nearly due east. Its appearance was very different from that which it must have presented in prehistoric times. The bank of earth in front of the entrance was caused in part by the erosion of soil from the hillside above the cave mouth and in part by other factors. During the Civil War the Confederate Army used the cave as a source of saltpeter. Large piles of earth and ashes, the by-products of the process of extracting the niter from the soil, were carried out of the cave and dumped at the entrance. Excavation in the ash beds outside the cave yielded no evidence of prehistoric occupation.

The entrance to the cave was about 40 feet wide, with an overhead clearance of about 10 feet. From the entrance, toward the rear of the cave, the floor descended and the roof ascended until, at a distance of 80 feet from the entrance, the ceiling was 40 feet high. The floor was covered with large rock masses which had fallen from the roof. Beyond this large vault the cave was much smaller and fairly dry. At a point about 1,000 feet from the entrance there was a pool of clear water. The entrance to the cave will probably be above the high-water mark of Norris Lake, but, since the floor descends sharply, the rising waters will certainly fill the rear portion of the cavern.

Inside the entrance the sloping floor was covered with ashes and midden deposit to a depth varying from 3 to 6 feet for a distance of 80 feet. The midden material contained much shell and many fragmentary animal bones. Beyond the bank of debris there seemed to be no further evidence of prehistoric occupation, although a careful inspection of the cave floor was made for a distance of 600 feet. A local inhabitant stated that some 3 years previously he had seen a burial wrapped in cane and bark resting on a ledge of rock in the cave wall, some 400 feet back from the entrance. He offered to guide the party to it. Careful inspection failed to reveal its location, or to yield any evidence of occupation deep in the cave, except for the wooden vats used by the Confederates in leaching the soil for niter. It is believed that the information given by the man was correct, since his description checked with information obtained by exploration—a fact which he could not have known at the time. The burial he had seen had doubtless been removed by someone within the last 3 years.

Excavation of the cave floor was begun at a point 80 feet from the entrance where the midden deposit thinned out to meet the rock floor of the cavern. Here a trench was run from one side of the cave to the other. The earth was thrown behind the workers into the cave as the trench was exploited laterally toward the entrance. In this way the entire midden deposit in the cave entrance was examined. This resulted in the removal of a layer of ashes and midden material from 3 to 6 feet over an area of about 3,500 square feet.

Figure 7 is a plan of the cave entrance. It shows the location of the 13 burials and the fireplace which were uncovered. While the cave was as dry as most caves the midden deposit at the entrance was damp and had long been subjected to the action of outside water. The water flowed into the cave as the result of the downward slope

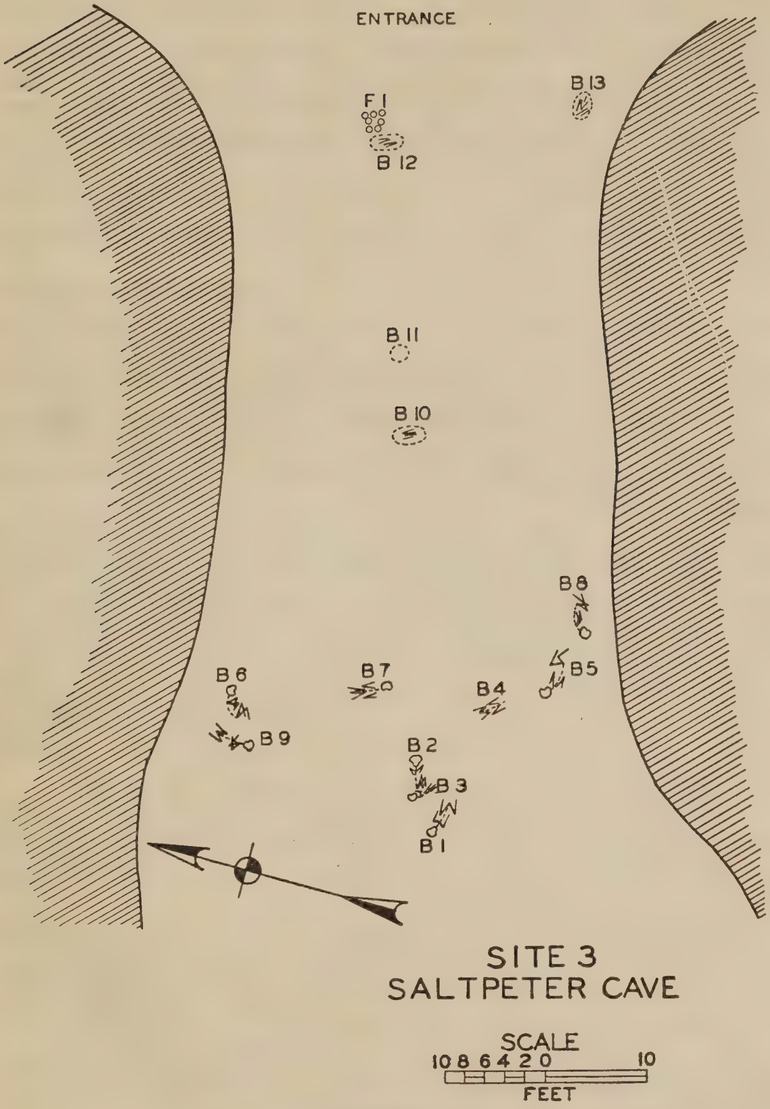

ENTRANCE
F 1
B 12
B 13
B 11
B 10
B 8
B 5
B 6
B 7
B 4
B 9
B 2
B 3
B 1
SITE 3
SALTPETER CAVE
SCALE
10 8 6 4 2 0
10
FEET

Figure 7.

of the floor and because of the accumulation of earth and ashes described above which blocked the mouth of the cave. As a result of this condition some of the skeletal material in the dampest part of this ash bed had decayed badly. Because of the frequent disturbances of the surface since prehistoric times, the data on the depth of the material discovered was considered to have little significance.

Burial No. 1.—The grave contained the skeletal remains of a child buried on its back with its head to the east. The legs were flexed on either side of the torso. The body had been wrapped in cloth and surrounded by the bark of trees. The covering was badly decayed, but some fragments were preserved.

Burial No. 2.—The grave contained the fully flexed remains of a young female. The body had been buried with the head to the northeast. It had been covered with a large rock, which, in shifting slightly downhill, had caused the flexed leg bones to shift to the rear.

Burial No. 3.—In this grave were found the poorly preserved remains of an infant which had been buried with the head to the north. It was flexed and lay on the left side. The skull had been crushed.

Burial No. 4.—This was a fully flexed adult which had been placed on its stomach. The head was under the thorax; the left forearm lay at right angles to the humerus and rested under the torso. The knees were flexed and the feet were placed at the pelvis. The preservation of the skeleton was very good.

Burial No. 5.—This was the body of a child which had been buried on its back with its face turned to the left. The legs were flexed to the left. The femora were placed at right angles to the pelvis; the tibia and fibula were closely flexed. The skull was crushed.

Burial No. 6.—A fully flexed adult, buried with the face down, was found in this grave. The knees were touching the chin. The pelvis bones and sacrum were missing. A bone awl was found between the feet and the skull.

Burial No. 7.—The grave contained the poorly preserved skeleton of an infant. It was buried on the back with its head to the southeast. The skull was crushed and the leg bones were missing. There was a faint indication of a bark wrapping.

Burial No. 8.—This grave contained the partially flexed remains of a child, buried on the right side. The skull was crushed. A dozen periwinkle shells were scattered on the body.

Burial No. 9.—This contained the partially flexed skeleton of a child, buried on the right side, with the head to the south. The body had been covered with a large rock, as shown in plate 11, *a*. Plate 11, *b*, shows the same burial with the stone removed.

Burial No. 10.—This burial of an adult was covered by a limestone slab 18 inches long and 12 inches wide. Many of the bones, including the skull and the pelvis, were missing. From the arrangement of the bones, shown in plate 12, *a*, it would seem that this might be described as a flesh reburial. Some of the bones, the spinal column in particular, were still in anatomical order.

Burial No. 11.—This was a cremated burial. The body probably had been burned elsewhere and the residue of ashes, together with the artifacts, had later been deposited in the cave. The artifacts found included a drilled antler amulet, a double spatulate bone artifact—probably a weaving tool—three arrow heads, one bone awl, and a bone celt. The burial was covered by a large oval-shaped stone. When the stone was removed many bone fragments adhered to it, as shown in plate 12, *b*.

Burial No. 12.—This was an adult burial covered with 10 large stones. The skull was missing, except for a part of the mandible. The bones were not in anatomical order. It appeared to have been a burial of disarticulated bones superimposed on a burned clay surface.

Burial No. 13.—The grave contained a pile of disarticulated bones of an adult, covered by a pile of stones. The skull was missing. A pestle was found in association with the bones.

Beside the burials the only other feature of importance encountered in the midden material was a stone hearth constructed of 25 stones in an oval arrangement, having a maximum length of 45 inches and a breadth of 33 inches. The fire pit adjacent to Burial No. 12 was filled with ashes to a depth of 5 inches. It was 36 inches below the present surface level.

POTTERY

The sherds from this site have a variety of surface finishes, as shown in plate 13, *a*, but are alike in that all are hard gravel or sand tempered; the gravel tempering being of coarse texture. All rims are plain, and there are no lugs, handles, or other forms of decoration. Among the surface finishes the following may be listed:

1. Comb trailing, as shown on the lower right corner of plate 13, *a*.
2. Cord-wrapped small cylindrical tool impression, as shown in the lower center of plate 13, *a*.
3. Cord-wrapped paddling.
4. Textile impressed. This textile appears to be an unusual form of twined weave. The sherds are small and wholly different in appearance from so-called salt-pan pottery, as shown by the sherd second from the right in the upper line of plate 13, *a*.
5. Grass-wrapped paddling, as shown by the sherd in the upper right-hand corner of plate 13, *a*.
6. Stamped ware. The meshes are square, 10 to the inch, and vary in size to rectangular meshes, 4 or 5 to the inch. By actual

count the stamped ware was found to represent 25 percent of the total.

Plate 13, *a*, shows one sherd having a projectionlike leg. The construction would seem to be the same as the four-legged vessels found on Site No. 12.

One fragment of a steatite vessel was taken from this cave.

ARTIFACTS

Stone artifacts are shown in plate 13, *b*. The flint implements are in general very crudely chipped. At the lower left is shown a "turkey tail" projectile point 4.8 inches long, very thin and beautifully made, which was found near the surface of this cave. For this reason it would seem that it was introduced into the cave at a relatively late period. A few perforated steatite disks and small celts were found, together with crude pestles, hammerstones, and mortars.

A seeming characteristic of this site was the use of crude two-hole gorgets of hematite, sandstone, or cannel coal, as demonstrated by the number of broken and unfinished specimens found.

Plate 14, *a*, shows samples of the awls taken from the general digging on this site. Awls were very numerous, being found by the hundreds. They were made from ulna of deer and wolf, deer scapula, split cannon bone of deer, bird bones, and deer horns.

Many other specialized bone artifacts were found. Plate 14, *b*, shows bone chisels, horn flaking tools, carved bone handles, fishhooks, hairpins, carved bear jaw, and cut bear femora, hollowed out and probably used to make a grease lamp, bone gorget and spoons made from shell, and the carapace of the box tortoise.

A double spatulate object of bone 10.75 inches long was taken from the deposited remains of a cremated burial. This object is highly polished and may have served as a weaver's tool.

CONCLUSIONS

The findings in this cave are in many ways similar to those reported from rock shelters in eastern Kentucky[1] which have been attributed to members of the great Algonquian family. Among those characteristics which seem to be diagnostic the following may be mentioned:

1. Occupancy and burial under rock shelters and in the mouths of caves.
2. Predominance of flexed burials devoid of artifacts.
3. Occasional evidence of burials of dismembered bodies in the flesh[2] and bundle burials of bones.

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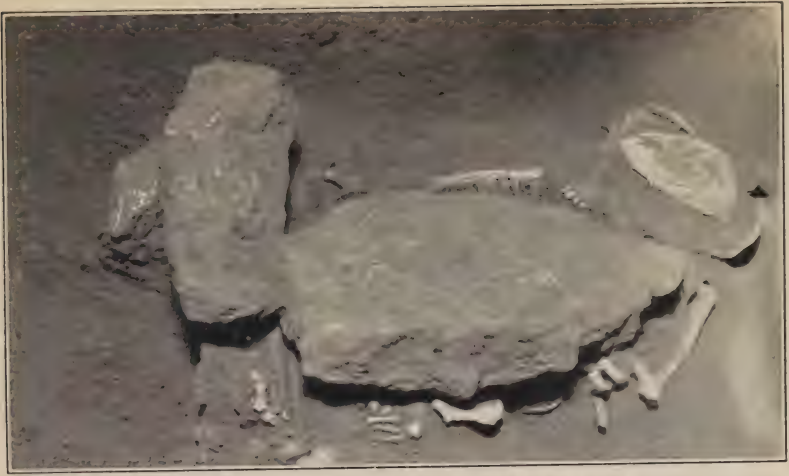
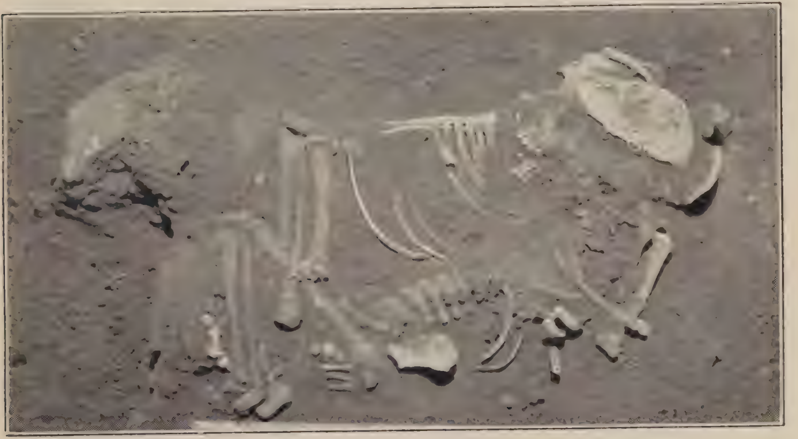
[1] See below, footnotes 2, 3, 4.

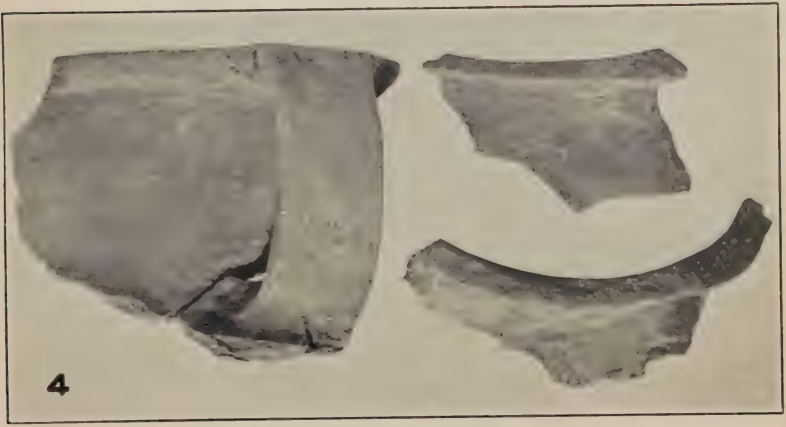
[2] Funkhouser and Webb, 1929, p. 67.



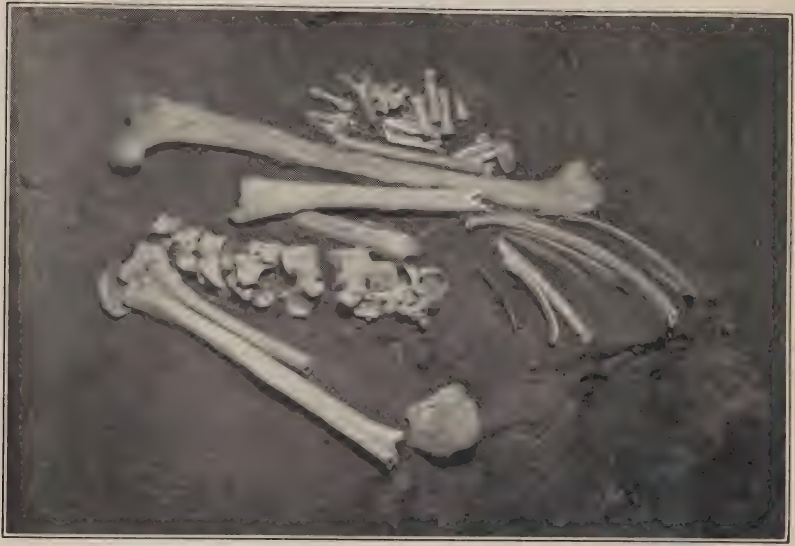
a. Use of large stones to cover burial. Burial No. 9, Site No. 3.



b. Stones removed from burial. Burial No. 9, Site No. 3.

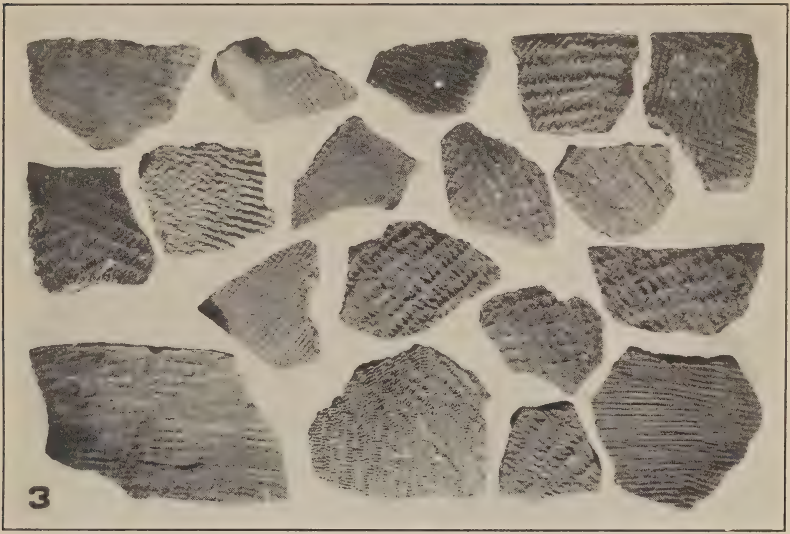


c. Sherds from rock shelter on McCarty farm. Site No. 4.

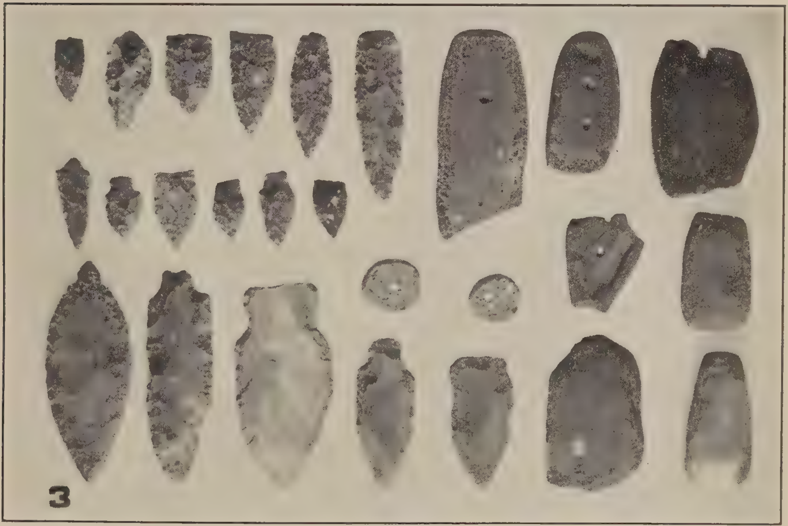


a. Reburial of portions of body in the flesh. Burial No. 10, Site No. 3.

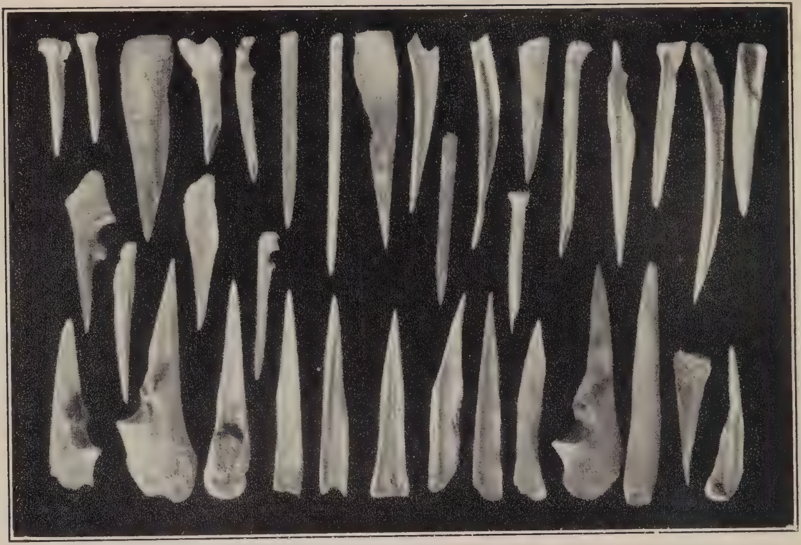
b. Deposit of cremated remains under a stone. Burial No. 11, Site No. 3.



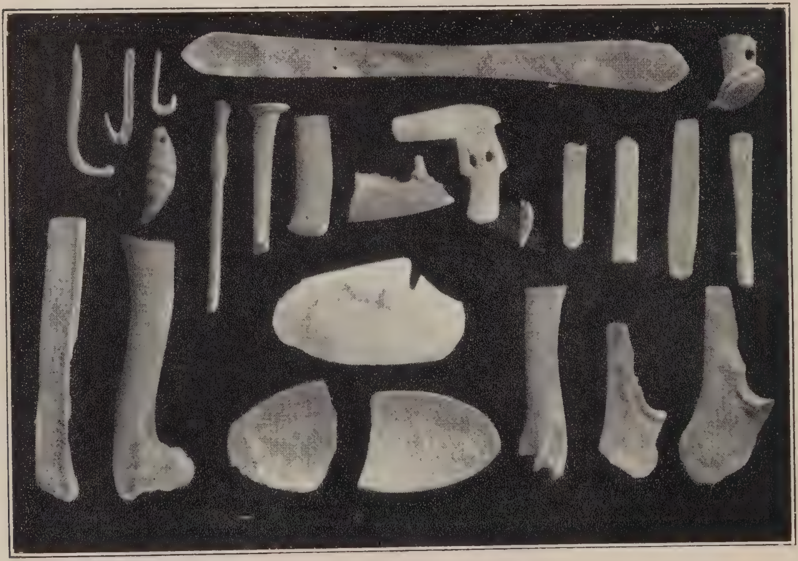
a. Sherds showing cord-wrapped paddle, grilled stamp, fabric-impressed and "combed" surface finishes from Saltpeter Cave. Site No. 3.



b. Stone artifacts from Saltpeter Cave. Site No. 3.



a. Bone awls from Saltpeter Cave. Site No. 3.



b. Bone artifacts from Saltpeter Cave. Site No. 3

4. The occasional deposit in cave floor of partially cremented remains,[3] the actual burning having taken place elsewhere.[4]

5. The association with cremated remains of some and often many well-made artifacts.[5] These offerings never include pottery.

6. The common use of two-holed flat and bar gorgets.[6] Gorgets were made of hematite, cannel coal, steatite, slate, and limestone.

7. The finding of oval vessels of steatite, with end lugs, cut from a solid block.

8. The use of a wide range of stemmed and unstemmed projectile points. There was, however, an entire absence of small triangular points.

9. The considerable use of bone for awls and scrapers.

10. The use of bone fishhooks.

11. The use of cups and spoons cut from carapace of tortoise.

12. The finding of the femora of bear cut squarely off and hollowed out. These may have been used as handles, but some are found charred inside as if used as a torch containing grease.

13. Practically speaking, no use was made of worked shell.

14. Pottery was gravel tempered, of coarse texture, and usually had grass or cord paddle marking.

15. Rims of vessels were plain and straight, without handles or lugs.

16. The entire absence of any evidence of the smoking custom.

From an inspection of the material evidence from this site one is driven to the conclusion that the occupants of this cave have no connection with the builders of the earth mounds and village sites of the Basin, but that their cultural affinities are to be sought elsewhere.

However, besides the similarity in traits at this site with the rock shelter above referred to, some of the potsherds found in this cave are remarkably similar to those reported by Harrington[7] from upper Tennessee River near Lenoir City, Tenn., and classified as belonging to his "round-grave culture." He described this type of sherd as "marked with parallel corrugated indentations" and asserted a belief based on its association that it was not of Cherokee origin.

Claflin[8] has found a similar pottery type at Stallings Island, Ga., and similar sherds are reported by Bushnell[9] from Kellys Ford, Va., on the Rappahannock. Bushnell expresses the belief that these "parallel corrugated indentations" as described by Harrington were produced by a basket used in forming the vessel. Both Harrington and Bushnell seem to regard this type of pottery as the oldest found in their respective regions.

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[3] Funkhouser and Webb, 1930, p. 272.

[4] Bushnell, 1920, pp. 38, 147. See also Father Sebastien Rasles in Jesuit Relations, vol. LXVII, pp. 154–159.

[5] Funkhouser and Webb, 1930, p. 274.

[6] Ibid., p. 251.

[7] Harrington, M. R., 1922, pl. XLVII, 6.

[8] Claflin, W. H., 1931, pl. 27.

[9] Bushnell, 1935, p. 94.

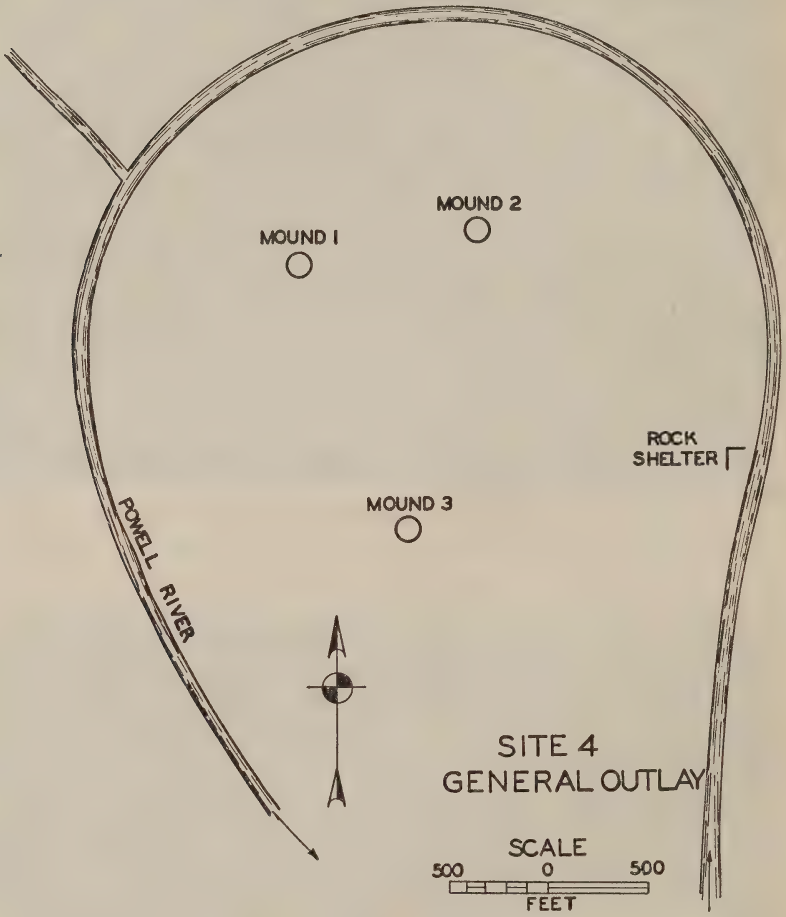
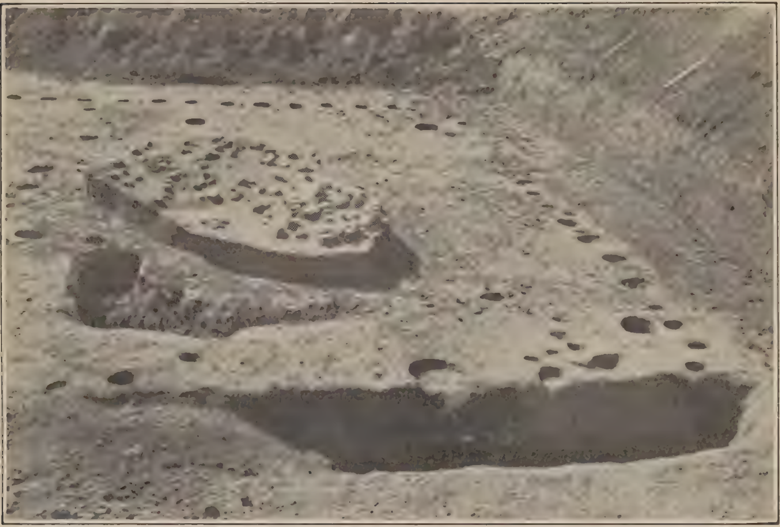


FIGURE 8.

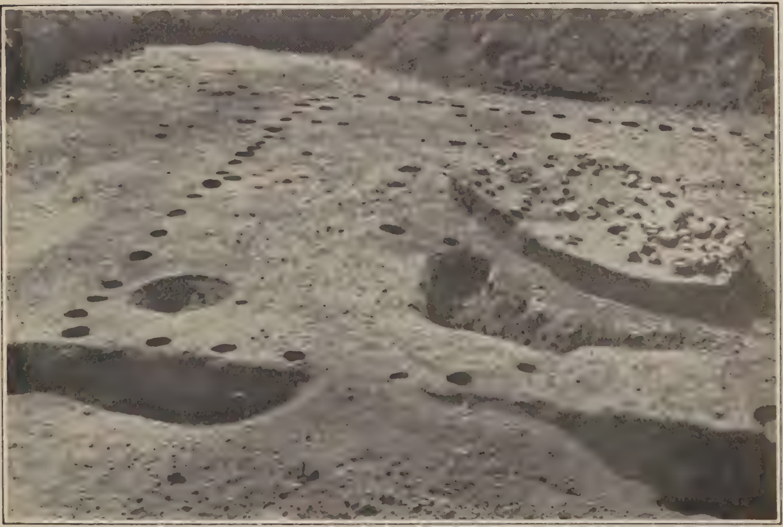
SITE NO. 4.—McCARTY FARM MOUNDS

LOCATION

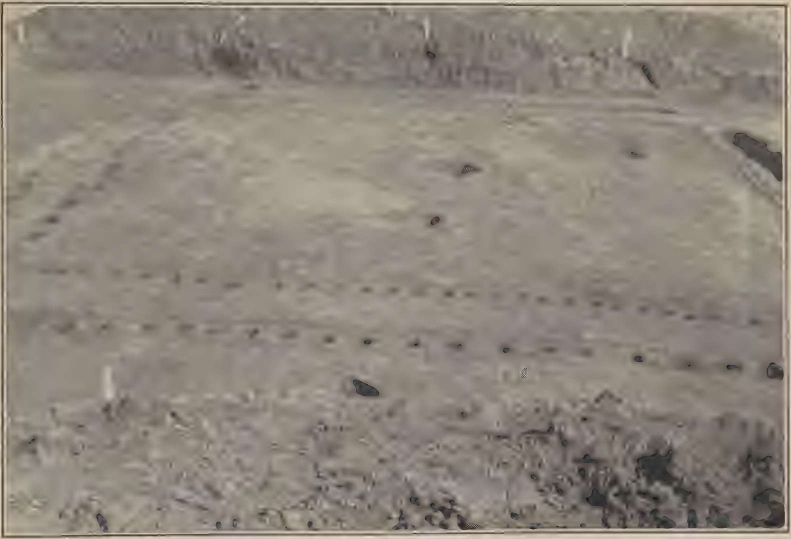
The McCarty farm lies in Lays Bend about 10 miles up Powell River in Campbell County, Tenn. The elliptical area almost enclosed by the river is about 3,500 feet long east to west and about 4,500 feet north to south. A plat of the site is shown in figure 8. This portion of the river is known locally as Lays Bend, but is designated on maps of the region as Upper Sweat Bend. The land



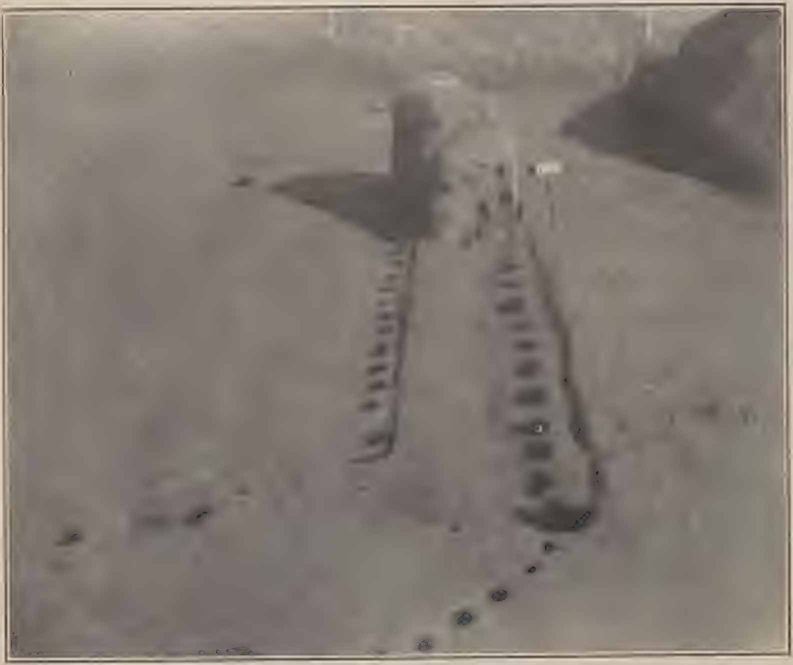
a. East half of post-mold pattern. Mound No. 1, Site No. 4.



b. West half of post-mold pattern. Mound No. 1, Site No. 4.



a. Structure pattern. Mound No. 3, Site No. 4.



b. Post molds in trenches. Small molds at corners of structure without trenches. Mound No. 3, Site No. 4.

in the bend is a fairly level plateau, sloping gently to the level of Powell River on the western side. On the eastern side the land rises to a height of 50 feet above the river bed and terminates rather abruptly in limestone cliffs, which are partially wooded, the larger trees being mostly red cedar. Here in these limestone cliffs a number of rock shelters and small caves occur. On the opposite side of the river, on the northern and eastern side, is another cliff region which has a series of small caves. The whole bend beyond the river is surrounded by low, rolling foothills. The outstanding components of this site are three mounds and a rock shelter located as shown in figure 8. The central and western portion of the farm had long been in cultivation, and the mounds had all been subjected to erosion and the leveling process due to cultivation.

MOUND NO. 1

Mound No. 1 is about 40 feet above the level of Powell River, which is about 1,000 feet distant to the north and also 1,000 feet distant to the west. The mound lies in a pasture once cultivated and was reported to have once been covered with stones piled on it. These stone slabs had been carried away to permit cultivation of the soil, and the mound had the usual appearance of an earth mound much eroded by cultivation. It was about 40 feet wide east and west and 50 feet north and south. The ground plan of Mound No. 1 is shown in figure 9. The mound was made of red and yellow clays mixed with charcoal and ashes. In parts of the mound small shell midden heaps were found. There was a distinct humus line marking the original surface of the earth under the mound, which showed that the center of the mound was 18 inches above the original ground.

Upon excavation a hard floor containing scattered post molds was at once discovered. The arrangement of some of these molds revealed a square structure 29 feet by 22 feet 6 inches, somewhat nonsymmetrically placed under the mound, but with walls very closely following the cardinal directions, as shown in plates 15, *a*, *b*; 16, *a*. The floor of the mound was burned hard in some places and charcoal and cane were found on the south end of the floor. There were a few fragments of pottery and burned bone scattered on the burned areas of the floor.

The outstanding features on the mound floor were Feature No. 1, an ash bed; Feature No. 2, a fireplace; and Feature No. 3, a circular depression arranged as shown in figure 9. Feature No. 1, an ash bed about 25 feet long, 5 feet wide, and 18 inches thick, extended east to west just north of the rectangular structure. The ashes rested on a burned floor and contained many mussel shells, some of which were calcined. Others showed no evidence of fire. A considerable amount of unburned animal bones was found. This ash bed was therefore a deposit of kitchen midden material as well as ash. In the ash bed were found five shell spoons, two bone awls, and an arrow point.

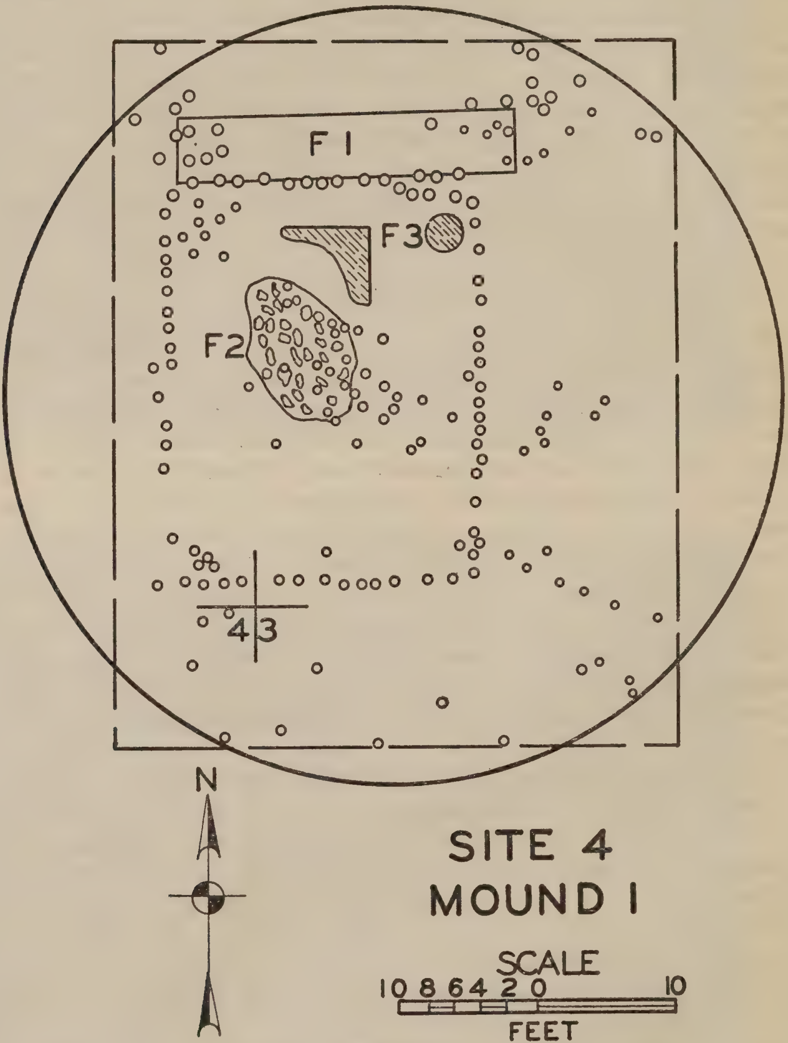


FIGURE 9.

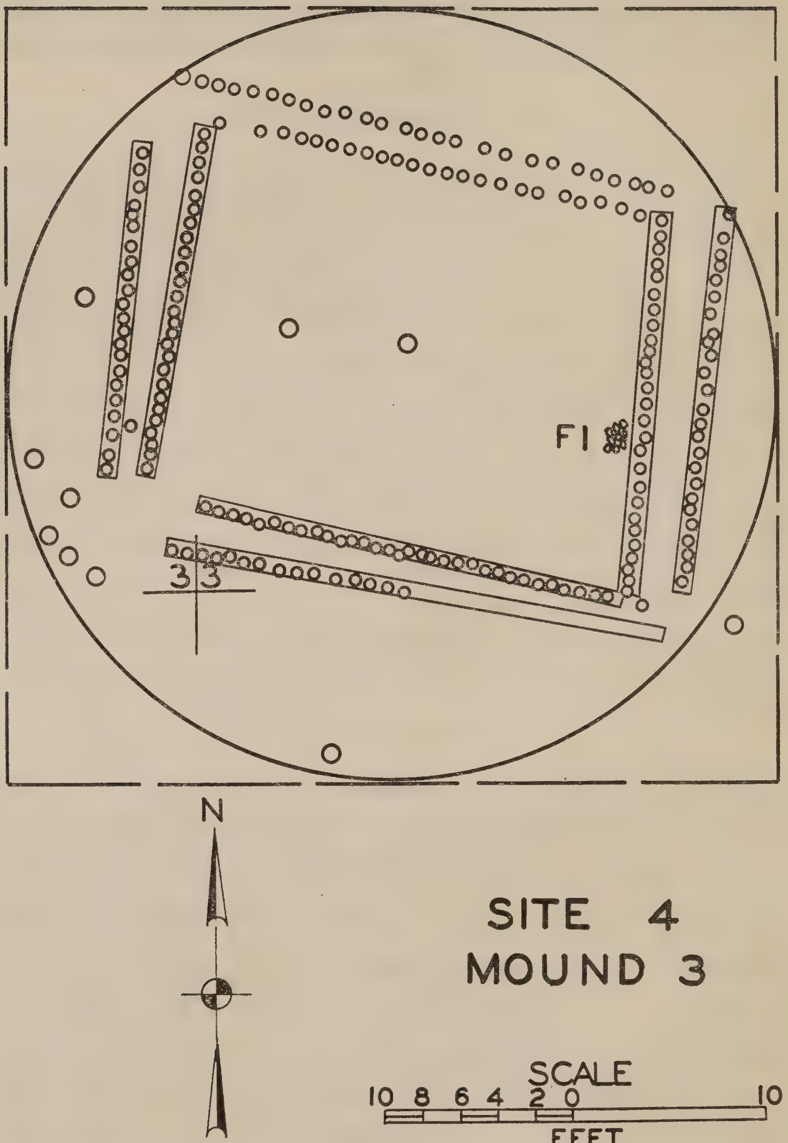
Feature No. 2 was a fireplace 11 feet 5 inches long, 6 feet 9 inches wide, and about 3 inches deep. This area contained a large number of small burned stones surrounded by charcoal, ashes, potsherds, and animal bones, as shown in plate 15, *b*. Feature No. 3 was a circular depression 29 inches in diameter and 15 inches deep filled with dark earth and ashes. It was located inside the lines of post molds near the northeast corner.

MOUND NO. 2

Mound No. 2 was a circular mound 40 feet in diameter and 2 feet in height. It was located in an old cornfield about 40 feet above the level of Powell River. It was composed of red and yellow clay mixed with charcoal and had been much disturbed by the plow. In some places the original humus line was definite but in other portions hardly a trace of it remained. Before the excavation, several large limestone slabs on the surface of the mound had been plowed out during cultivation. Near the center of the mound three stone cists were found, made of large limestone slabs set on edge at the side of the graves. Two of these cists were empty, but the third contained the partial remains of one burial which had been disturbed. Associated with the disturbed burial were a few pieces of burned wood over the lower jaw which appeared to have been burned in situ. A stone had been placed over the burned area and several small stones on the side. The other bones of this skeleton were partially burned. The absence of post molds would seem to indicate that the purpose of the mound was clearly to cover the burials.

MOUND NO. 3

Mound No. 3 lay in a plowed field about 50 feet above the level of Powell River and some 1,400 feet south of Mound No. 1. It was a circular mound, 40 feet in diameter, made of mixed red and yellow clay and containing some charcoal. The humus line showed the original level of the soil. As the mound was removed the post-mold pattern shown in figure 10 was revealed. This double-wall rectangular structure shown in plate 16, *a*, was made of posts set in trenches. These trenches were cut in the original earth floor and the base of the posts set in position. The surface soil was then packed in the trench, thus firmly embedding the posts in the ground. The outline of the trenches could easily be seen, as shown in plate 16, *a*, on the east, south, and west sides of the structure. The trenches filled with humus were much softer than the surrounding soil and a portion of the trench in the south wall was excavated by workmen before they noticed the existence of post molds. In this structure the trenches did not extend to contact each other at the corners but stopped short several feet. These corners were filled out by smaller


F1
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MOUND 3
SCALE
10 8 6 4 2 0
10
FEET

FIGURE 10.

stakes driven in the hard soil without trenching (pl. 16, *b*). Within this structure and near the center of the east wall was a circular fire pit about 2 feet in diameter and 4 inches deep. It was filled with charcoal and fire-cracked stones. It is designated Feature No. 1 in figure 10.

ROCK SHELTERS

On the east side of the McCarty farm are several rock shelters in the high limestone bluffs overlooking Powell River to the east. They are from 30 to 40 feet above water level. They were all examined for evidences of prehistoric occupation. One of these small shelters was 6 feet high in front, 6.5 feet wide, and the cavity extended 8 feet to the rear. The interior rock floor was filled with loose stone and earth mixed with charcoal and ashes to a depth of 3 feet. Excavation of this small shelter revealed potsherds, animal bones, the teeth of bear, and the jawbone of a beaver. Other rock shelters in this vicinity showed no definite evidence of prehistoric occupancy, nor did a number of similar shelters on the west side of Powell River immediately opposite the McCarty farm, which were carefully investigated.

POTTERY

A very small amount of material was obtained from this site because the three mounds investigated had been nearly destroyed by long cultivation and no part of the surrounding area was excavated. Sherds show textile markings of usual design; cord-wrapped paddled impressions which were in some cases partially obliterated by later troweling, and also some plain ware of thin-wall undecorated vessels. The round type of pot handle was alone found. Tempering was of shell and the texture was from medium to coarse.

Artifacts were limited to a few perforated shell hoes, cannel-coal disks, one celt, and a few broken projectile points.

From a small cave on this farm well-preserved sherds of two large vessels were found, one having a flared rim showing a diameter of 16 inches. This vessel was cord-paddle marked, with impressions partially obliterated by the trowel. The other vessel, made of gray clay burned yellow, of which a drawing showing restoration is presented in figure 21, was 18 inches in diameter, and one sherd showed a large strap handle 5.5 inches long and 2.25 inches wide. These sherds are shown in plate 11, *c*. This material does not seem to be typical of the caves of this region and suggests that this cave was used as a storage place by those occupying the site on the elevation above. These large vessels, shown by clean, well-preserved sherds, failed to indicate any use in connection with fire. They probably were used as storage receptacles in this shelter.

Conclusions

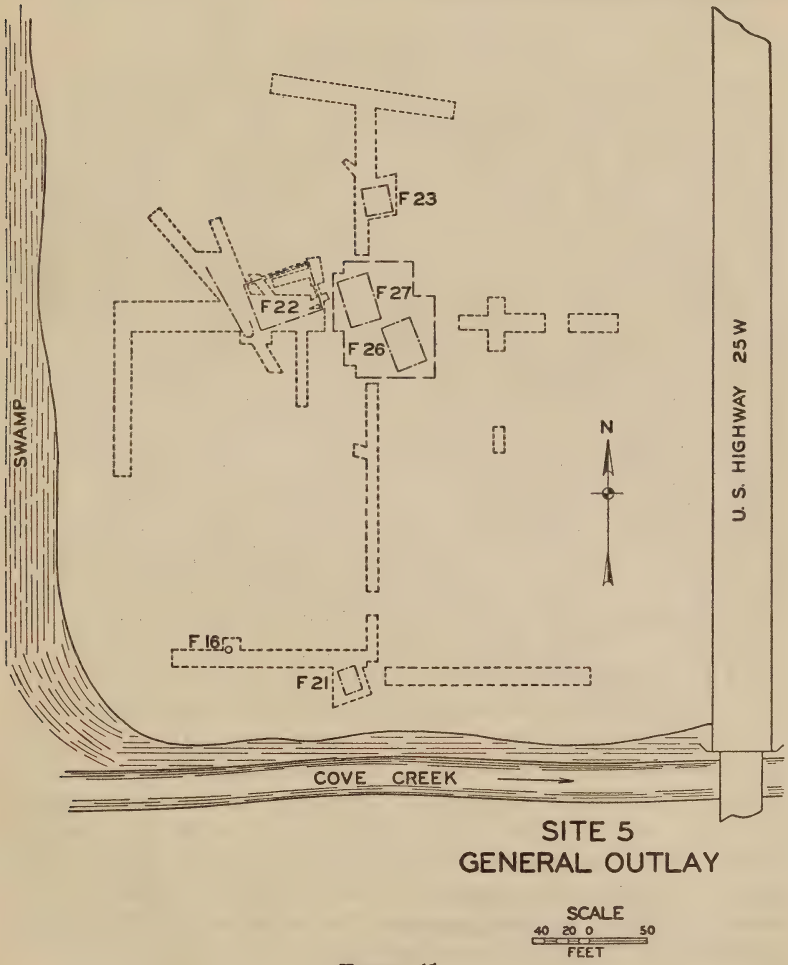
The considerable disturbance to which all the mounds had been subjected by cultivation, the very complete destruction of Mound No. 2 by previous excavation of the burials, and the great scarcity of artifacts make definite conclusions as to the prehistoric inhabitants of Lays Bend very difficult. The outstanding fact of the use of rectangular structures, built of vertical logs set in trenches, seems to connect them with the builders of other sites in the Basin. From the size of the structures it is to be supposed that they were earth-covered. There was no evidence that these structures were burned. It may be supposed that the structures stood until they collapsed because of the decayed wood, and the mounds were formed by the earth that had once covered them. They were, thus, probably never very high mounds—not more than 4 feet—since there was evidence of only one level of occupancy. It would further appear that this site was only sparsely inhabited, and that occupation here extended only for the lifetime of one, or at most two, log structures. It is believed that an occupancy of from 50 to 75 years' time by a comparatively small group would be quite sufficient to account for all evidence discovered.

Site No. 5.—THE IRVIN VILLAGE SITE AT CARYVILLE

This site, a map of which is shown in figure 11, located just outside the limits of Caryville, on the west side of U. S. Highway No. 25 and on the north side of Cove Creek, lies southwest of the Cumberland Mountain Ridge. Directly west of the site this ridge is broken by Caryville Cove, from which Cove Creek flows. The mountain ridge then continues without interruption to the southwest. Along the south and southwest Cove Creek flows to empty into Clinch River, immediately above Norris Dam, which fact accounts for the early description of Norris Dam as Cove Creek Dam. A high protective ridge lies to the southwest of this area, rising at the bank of Cove Creek.

The land at this point is rolling and fertile, being protected from three sides by mountains and foothills. Plate 17, *a*, shows the highway and Cove Creek together with the level bottom land along the roadway. The land, which is very fertile, is at present under cultivation—the last crop in 1933 having been corn. It has been in cultivation, according to local report, for the last 100 years.

Here a village, many acres in extent, was revealed by the presence of a single mound in the center of the area and by the usual signs of a village scattered over some 12 or 15 acres. The most notable feature of the site was the low earth mound 100 feet by 150 feet. In the central middle distance of plate 17, *a*, is shown the party at work on the mound. Plate 17, *b*, shows this mound staked off and excavation just started at the southern edge. The mound was only about 3 feet above the field level at its highest point, erosion and cultivation having spread the upper portion. Its surface sloped so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F 22
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N
SWAMP
U. S. HIGHWAY 25 W
F 16
F 21
COVE CREEK
SITE 5
GENERAL OUTLAY
SCALE
40 20 0 50
FEET

FIGURE 11.

gradually that its character would almost escape detection. After excavation had been begun in the mound, trenching outside the mound area revealed a considerable village site and a number of postmold patterns were discovered. Excavation in the mound soon showed that it marked the site of two adjacent rectangular structures of considerable size. The remains of the structure under the south end of the mound was designated as Structure No. 1, Feature No. 26. This structure proved to be 41 feet long and 26 feet wide. The remains of the building under the north end of the mound was designated Structure No. 2, Feature No. 27. It was found to be very nearly the same size as Structure No. 1 and to have the same orientation, as shown in figure 11.

STRUCTURE No. 1

This structure was erected by setting the base ends of vertical posts in four trenches which formed a rectangle. The trenches were about 18 inches deep and 14 inches wide, and outlined the structure as shown in plate 18. Figure 13 shows a ground plan of the structure. The trenches were filled with dark loam and in some parts of the trench showed a double row of post molds, one row down the center and the other along the inner edge. Along the outer edge of the trench and standing on edge were numerous flat stones, both limestone and sandstone, which apparently were used to assist in supporting and steadying the posts of the walls. With the exception of the east wall, it was difficult to trace the post molds in the trenches, due to the fact that the trenches were filled with soft black loam which held the impressions of the mold very imperfectly and generally made digging and tracing of the molds very difficult. A considerable part of this black loam which filled these trenches is believed to have been due to the decay of logs, laid horizontally against the base of the vertical posts. These horizontal logs were held in place by the flat stones chinked in behind them. The stones thus appear at the bottom of the trench always on the outside, as illustrated in plate 19. However, on the north end of the structure a portion of the trench was covered with hard clay which preserved the post molds in shape. The trench and its relationship to the molds is shown in plate 21, *b*. The method of construction of the base of the walls is illustrated in plate 21, *a*. Here the vertical post molds go down past a horizontal mold which was made by the decay of horizontal logs laid against the vertical posts at the bottom of the trench. The logs were originally held in place in part by the flat stones chinked in between them and the trench walls. This method of construction seemed to be characteristic of the larger structures at this site.

Almost at the beginning of the excavation of the south side of the mound a row of flat stones set on edge was discovered. These were designated as Feature No. 1 on the plat, and are shown in plate 20. These stones, which were 5 feet apart, were in very good alinement and, while they were all on the same level, yet their depth below the surface of the mound varied from 10 to 20 inches, due to the slope of the mound surface. A few of these stones had been scratched by the plow and one had been broken, the top half having been removed. This line of stones was about 26 feet long and about

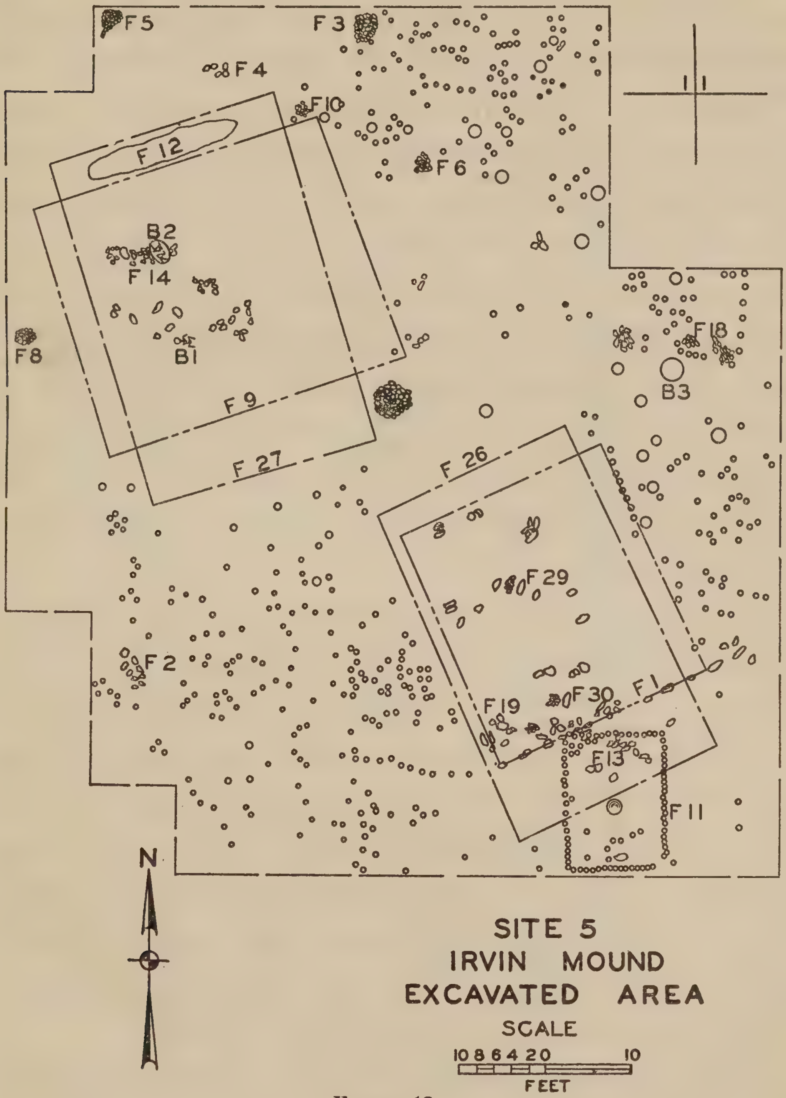

F 5
F 3
F 4
F 10
F 12
F 6
B 2
F 14
B 1
F 8
F 9
F 27
F 26
F 18
B 3
F 29
F 2
F 19
F 30
F 1
F 13
F 11
1 1
N
SITE 5
IRVIN MOUND
EXCAVATED AREA
SCALE
10 8 6 4 2 0 10
FEET

Figure 12.

2 feet above the level of the floor of Structure No. 1. In view of the method of construction of the walls of Structure No. 1 at this site, as explained above, it is believed that this line of stones set on edge represents the remains of a structure constructed on or near

the surface of the mound. Due to cultivation and erosion, no associated post molds or other traces of the structure remain. Only the line of stone used to chink the horizontal logs which held the vertical posts of the structure in place was left. Such lines of stone were found on the north side of the mound, some 150 feet distant, and are likewise believed to be definite evidence of structures in the upper portion of the mound.

About 4 feet south of the north wall of Structure No. 1 was a trench about 8 inches wide and 20 feet long. A single row of post molds appeared in this trench. The molds could be traced only with great difficulty along its entire length because of the softness and the color of the loam in the trench. Plate 21, *b*, shows at the left the molds in the trench. The loam-filled trench across the north end of Structure No. 1 certainly represents a line of post molds at least 18 inches or more above the floor of Structure No. 1. This would have brought the bases of these posts to the same level as the row of large rocks which crosses the south end of Structure No. 1 at a level of about 18 inches above the structure floor. This row of large rocks is designated as Feature No. 1. It is believed that this loam-filled trench and Feature No. 1 together are parts of the same structure built on this mound after the collapse of Structure No. 1, with a floor level about 18 inches above the primary floor of Structure No. 1.

Approximately in the center of Structure No. 1 was a large fireplace, Feature No. 15, a close-up of which is shown in plate 21, *c*. This circular fireplace, made of hard-burned clay, is 3.5 feet in diameter. It was raised 6 inches above the floor of the structure in which it was used. The central pit was 18 inches in diameter and 8 inches deep. On the northeast side of this fireplace is a cleft or a shelf in the outer rim. This was not made during excavation and so may have been an intentional feature. This niche is 18 inches broad and extends inward 13 inches. A large stone was found associated with this niche on the northeast side at the time of excavation. It is possible that this stone was once seated on the shelf as a part of the altar. After the removal of the fireplace a circular pit was found under it. This pit was approximately 3 feet in diameter and 2 feet deep, and contained potsherds and burned fragments of animal bones mixed with ashes and charcoal.

In the northeast corner of Structure No. 1 was another small fireplace which was designated Feature No. 17 on the plat. This fireplace consisted of an area of hard-burned clay about 2.5 feet long and 2 feet wide without the central pit. Along the side of this area were two parallel trenches 3 inches deep.

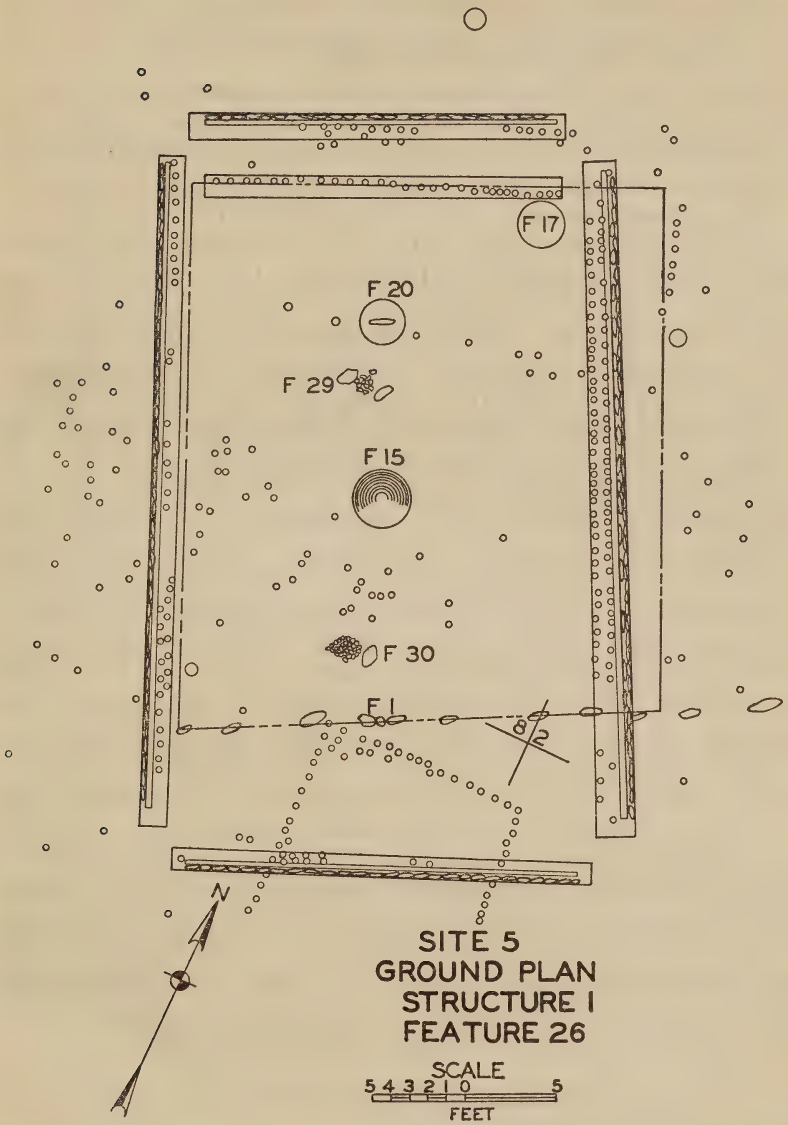

F 17
F 20
F 29
F 15
F 30
F 1
8/2
N
SITE 5
GROUND PLAN
STRUCTURE I
FEATURE 26
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 13.

Approximately on the center line of Structure No. 1 and about 10 feet from the north wall was a pit with a rock standing in the center and designated as Feature No. 20 on the plat. This pit was 22 inches deep and the circular opening was 30 inches in diameter. It was filled with loam mixed with ashes.

Feature No. 29 and Feature No. 30 were pits about 2 feet in diameter, located as shown on the plat. These pits contained humus and broken stone which showed the effect of fire. Feature No. 29 is shown in plate 22, *a*, and Feature No. 30 is shown in plate 22, *b*.

Lying across the south wall of Structure No. 1 was a rectangular system of post molds 12 feet long and 14 feet wide. The posts of this structure, designated as Feature No. 11 in figure 12, were relatively small, not being much over 3 inches in diameter. The molds extended down well into the hardpan, but there seemed to be no evidence of trenching. This structure was oriented nearly exactly along the cardinal directions, and was believed to have represented the remains of an early dwelling house. The fact that it was cut across by one trench of the wall of Structure No. 1, as shown in plate 20, definitely suggested that this structure antedated the building of Structure No. 1, the collapse of which began the formation of the south end of this mound. It would appear from this fact, and others presented later, that before Structure No. 1 was erected and the mound was built the area was occupied by a village of many houses. At the southwest corner of the post-mold pattern of this dwelling house—if such it may be called—no post molds were found, leaving an opening 18 inches at this corner. This opening was probably the doorway. Inside, and at the northeast corner of the structure, was a pile of stones designated as Feature No. 13. Near the west wall of Structure No. 1 the remains of what was once a large cedar post was found surrounded by a circular arrangement of stones, as shown in plate 23, *a*. The location of this feature, which was designated Feature No. 19, is shown in figure 12. When removed for study, as shown in plate 23, *b*, this log was found to be 18 inches long and to have been so set that it extended into the hardpan several inches. It is hoped that this specimen will yield valuable information on the possible date of this structure when studied by the methods of dendrochronology.

Mound Above Structure No. 2

When the northern portion of the mound was excavated, among the first outstanding features encountered were three rows of stones set on edge to form a rectangle, designated as Feature No. 9 on the plat of the site, figure 14. The northern line of these stones is

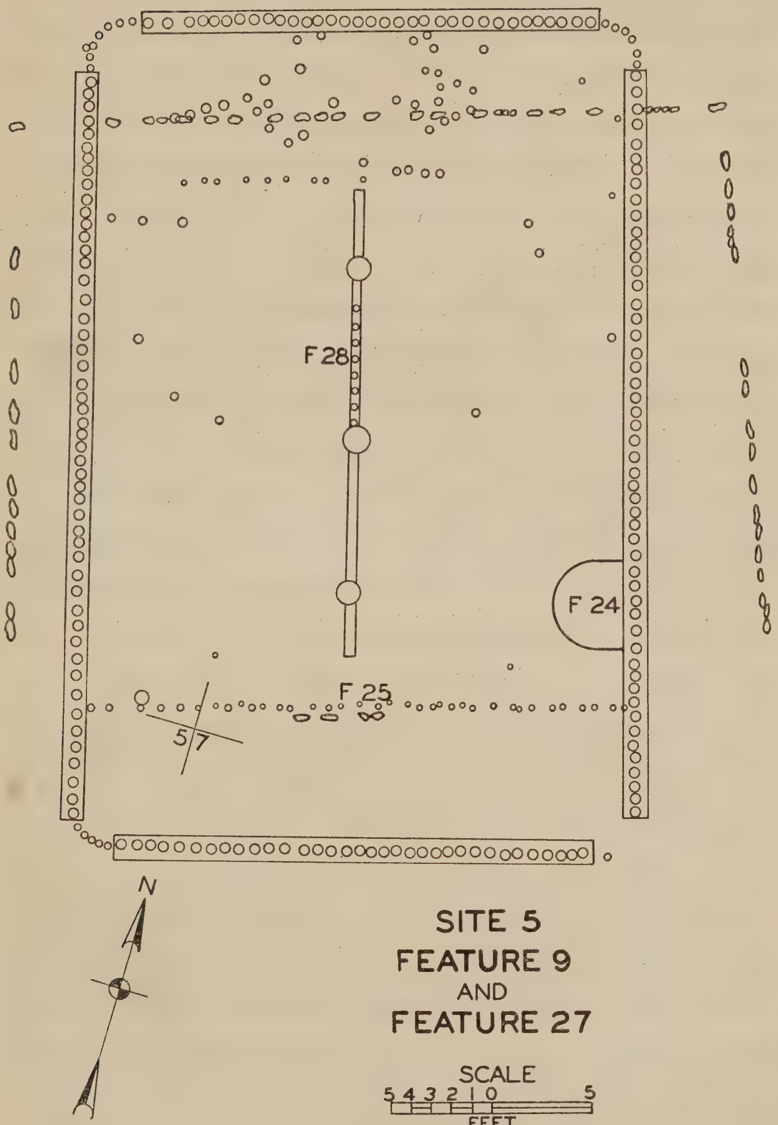

F 28
F 24
F 25
5/7
N
SITE 5
FEATURE 9
AND
FEATURE 27
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 14.

shown in plate 24, *a*. These stones were at a depth of 28 inches and seemed to mark the limits of a structure on the area, but no post molds could be traced in connection with them, and no evidence of any trench was found. Upon further removal of earth south of that point a line of four stones, paralleling a line of post molds in hard yellow clay, was discovered. These post molds were designated as Feature No. 25, as shown on the plat of the site, figure 14. The line of post molds was on the same level as the three lines of stones and, with them, completed a rectangle 28 feet wide and 35 feet long. It would seem that this rectangle was the outline of a structure erected during the later history of this mound. A very simple explanation of the finding of post molds without stone on the south wall and the finding of lines of stones with post molds on the east, north, and west walls, was made possible by further excavation. At a depth of about 18 inches below the level of this rectangle evidence of a very elaborate structure whose roof had been made partly of pure yellow clay was discovered. When this structure had been burned the yellow clay roof was quite hardened, and when it fell in position it formed a good foundation for this later structure. The south wall of the later structure extended across the yellow clay of the fallen roof. Because the clay was so tough and solid it retained the impression of the post molds and made unnecessary the use of stones for their support. The east, north, and south walls of the structure were located in or near the humus of the original village floor, and, because the soil was soft, it was necessary to use stone supports. In addition, the character of the soil—soft and black—made the retention of post molds uncertain and their detection practically impossible. The line of post molds forming the south wall of this structure extended down into the yellow clay which formed the roof of the lower primary structure. However, they terminated before reaching the floor of this lower structure, as shown in plate 24, *b*. Within the area of this rectangle two burials were discovered. These are shown on the plat of the area, figure 12.

Burial No. 1.—A burial of a child, extended in the flesh, was found at a depth of 17 inches below the surface of the mound. A rectangular pit with straight sides and rounded ends had been dug from the surface of the mound to a depth of 17 inches. This burial was in poor condition, only a portion of the skull, the leg bones, and the teeth remaining. These last gave evidence of the age of the individual.

Burial No. 2.—This was an adult, partially flexed and lying on the right side. The burial was made in a rectangular pit 28 inches long and 50 inches wide with straight sides and rounded ends. The floor of the pit was on a burned-clay area. No ashes were mingled with the burial. The burial was covered with nine limestone rocks. It is designated on the plat as Feature No. 14. In this burial the legs were drawn up, the heels close to the base of the spine. The arms were at the sides and the forearms across the stomach. The vertebrae were all in place except the axis and atlas, which were missing. The skull was not found. This skeleton is shown in plate 25, *a*.

Inside of the area of Structure No. 2, near the center of the western wall and some 24 inches above the original humus line, many flat stones were found. Some were widely scattered and some were in irregularly placed groups in squares 8.7 and 7.7. Some of the stones in square 7.7, designated Feature No. 14, cover Burial No. 2. The stones on this level, in combination with the remains of a baked-clay floor, lead to the assumption of another level of occupancy above Structure No. 2. The stones were in general disarray. Some were on the edge of the floor and apparently had served the same purpose, of supporting vertical posts, as those found at lower levels. The stones which were discovered at the higher level had been disturbed by cultivation, since the present surface was, at a maximum, only 8 inches above them. Some of them even protruded through the earth. The stones may therefore represent a second structure built above Structure No. 2, i. e., the third and perhaps the last structure built in this northern portion of the mound.

STRUCTURE No. 2

Continued excavation in the northern section of the mound revealed another structure, erected on a subterranean floor, designated as Feature No. 27 on the mound-floor plat, figure 12, and shown in detail in figure 14. The area of this floor was 27 feet by 41 feet. It had been excavated to a depth of 12 inches into the yellow clay hardpan. As usual, a trench had been dug and vertical posts seated at intervals in it. The trench was about 12 inches wide and from 18 to 24 inches deep. Because these trenches were in undisturbed hardpan no horizontal logs were needed and no stone chinking was required. None was found within this structure. The individual posts were about 4 inches in diameter and had been well seated in the clay-filled trenches.

When the structure was discovered a trench some 2 feet wide and 3 feet deep was excavated outside the line of post molds, to give an opportunity for studying the construction of the building, and to permit the easy removal of the earth from the structure. It is believed that the small end of each vertical post was bent toward the center of the structure to meet the top of a similarly situated post in the opposite wall. The tops of this pair of posts were then lashed together to form a complete rib of the building, like an inverted basket. This process was carried on throughout the length of the side walls, stopping about 3 feet short of the corners of the building. End walls were set in the same way and as the small ends of the posts of these end walls were bent down a 1-foot mesh of cross poles was formed overhead. Each of the poles was 3 inches in diameter. On top of this mesh of poles split cane was spread and grass thatching attached. The whole building was then covered with earth. The weight of the roof was partly supported by large individual posts set up vertically in the interior of the structure. Later the building was burned, and, being covered with earth, incomplete combustion resulted.

The structure then collapsed on the floor, as shown in plate 25, *b*. This structure suffered very uniform partial combustion. Because of this fact, the falling excavated portions readily revealed the method of construction. Plate 26, *a*, was taken of a section which showed grass thatch. After falling, the earth on the roof of the building smothered the fire and left the charred remains preserved without further damage. When this charred structure was removed from the clay floor a number of plaited and twisted strings, some with knots, were found in the charcoal, which definitely suggests the method for attaching the grass and split cane to the posts of the structure (pl. 27, *b*).

Plate 26, *b*, shows the floor of Structure No. 2 cleared of the fallen building. The pile of charcoal resulting from the burned structure is shown in the trench at the right. This figure also shows, in the right distance, the humus line, and clearly indicates that the top of the yellow clay hardpan was above the floor of this structure. The floor was, by actual measurement, 12 inches below the hardpan surface. This was the only instance recorded in the investigation of this region where a structure floor was dug below the hardpan. Further evidence of this fact is shown in plate 27, *a*, which shows a section of the east wall of Structure No. 2. The light-colored soil to the left represents the filled-in subterranean primary floor. The clay hardpan dug out by the builders shows yellow in comparison with the village soil when photographed with a color-sensitive film. In Structure No. 2 no horizontal molds were found in the trenches and no rocks were used to chink up posts. It is believed that these were not used because, due to the hardness of the clay subsoil, such aids in construction were unnecessary.

When the floor was cleared many scattered post molds of small size were found within the structure. These were formed, it would seem, by stakes driven into the floor. There was also a central line of post molds, designated as Feature No. 28, figure 14. This central line began and ended with a very large mold. Another large mold was exactly midway between the two end molds. Extending from the first to the last of these large molds was a shallow trench about 1 foot wide, 6 inches deep, and 16 feet long. This trench was filled with ashes, earth, and charcoal, and the bottom of the trench showed evidence of fire hardening. In this trench, and between the first and second large post molds in the north half of the line, were eight smaller molds.

An important discovery on the floor was Feature No. 24, a clay seat of two steps. It is shown in plate 27, *c*, just emerging from the earth of the fallen roof. This seat was made of hard-packed clay, fire-baked. The top step was approximately rectangular. The lower step was semicircular in form. The dimensions of the seat are shown in figure 15. It was nonsymmetrically placed near the southeast corner of Structure No. 2 and was built immediately against the east wall. The post molds of the east wall extended up past both steps of the seat, as shown in plate 129, *b*, where it is placed for comparison with other similar seats found in other town-house sites.

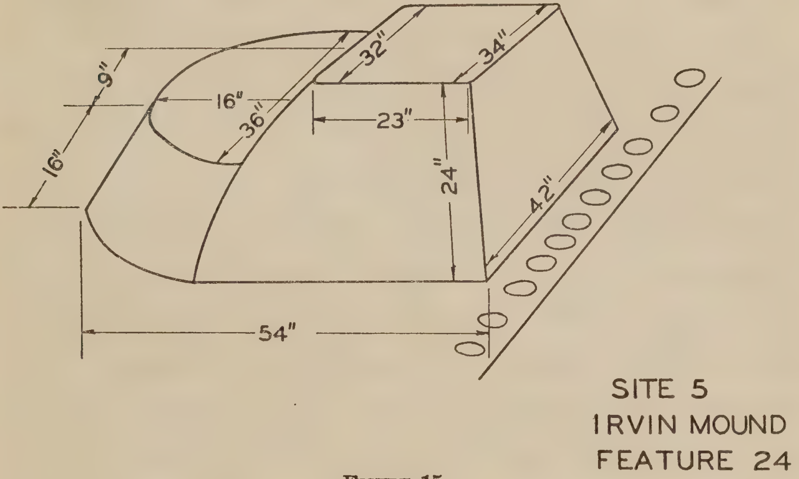


FIGURE 15.

In order to show the manner of construction at the corners of Structure No. 2 the northeast corner was cut down on the outside to show a longitudinal section of the post molds. This section is shown in plate 28, *a*. On the left is shown a longitudinal section of post molds of the north end of the east wall. The posts were set in a trench about 20 inches deep which terminated 2 feet short of the north wall. Here several smaller stakes were driven in the floor to a depth of 5 inches in the arc of a circle to meet the east end of the north wall post line. In the excavation a notch had been cut in this line of post molds, beyond the third post mold from the corner, so that one may see the form of the old trench in which the posts were set. This notch was four posts wide and showed the old trench as a vertical section in its west wall. On the bottom of the notch the lower ends of the four molds were almost entirely cut out, but were still visible.

Mound Area Outside of Structures No. 1 and No. 2

Under the mound, and resting on the yellow-clay hardpan, but outside of Structures Nos. 1 and 2, numerous stone piles were found. These were made of sandstone pebbles from 3 to 6 inches in diameter with from 8 to 40 or more in a pile. These were designated as Features Nos. 2, 3, 4, 5, 6, 8, 10, and 18. The location of each is shown in the plat of the area, figure 12. These stones were laid close together in the pile, showing no definite order. That they were intentionally laid seems certain, but their purpose was not apparent. There were no ashes or midden material in association with the stones and nothing gave a clue to their use.

Some 15 feet east of the north end of Structure No. 1 a burial was found 12 inches below the hardpan floor. A circular pit about 28 inches in diameter had been dug some 15 inches down from the mound surface and four flat limestone rocks, shown in plate 29, *a*, had been placed on the floor of the pit. The body of a child, which was seemingly in anatomical order, had been placed on the stone floor. The preservation was so poor that it was difficult to determine certainly the method of burial. All that remained was four ribs, scattered toes, and finger bones. Above the burial, but seemingly in association with it, were eight conch-shell beads and other fragments of shell.

Feature No. 12 was a burned area 26 feet long and 6 feet wide under the north end of the mound. This area showed baked clay and burned cane and paralleled the line of rocks designated as Feature No. 9. The pit at the western extremity of this burned area contained burned animal bones mingled with burned clay.

About 100 feet north of the mound a trench 20 feet wide and 100 feet long, running east and west, was uncovered down to the hardpan, to see if the village had extended in this direction. This trench revealed scattered post molds and crossed the western edge of what seemed to be a rectangular structure. When it was exploited to the east as shown in the plot of the trench system (fig. 11) the post-mold pattern shown in plate 28, *b*, and designated Feature No. 23 was revealed. These molds were in the hardpan 18 inches under the humus line. This group of molds was made by exceptionally large posts, the molds being about 8 inches in diameter, a few being even larger. They were spaced about 18 inches apart; i. e., about 22 inches between centers. This was in marked contrast to the usual construction in this region. Figure 16 shows a plot of these molds. At the southeast corner there appears to have been a doorway. A rock pile, marked *A*, made of eight stones arranged in a small pit, was located on the floor in the southwest corner of this structure. another rock pile, designated *B*, was composed of 100 stones surrounding a large central stone on the floor. With these stones were discovered potsherds, flint chips, and ashes. In the center of the structure was a circular fireplace. This fireplace was an area of hard-baked clay with an almost square opening. The square hole was 20 inches on a side and the fireplace was 12 inches deep. It is shown in plate 29, *b*.

South Trench

Some 240 feet south of the mound a trench 20 feet wide was run for a distance of about 300 feet east to west, as shown in figure 11. This trench was cut down to the hardpan and was 13 inches below the surface. Throughout its length there was abundant evidence of a village site. The earth contained the usual village and midden material in quantity. Feature No. 16, 230 feet south and 130 feet west of Mound No. 1, was an oval-shaped pit made of clay which had been hard-baked. It was filled with about 30 round smooth sandstones. There was no sign of ashes or charcoal, and the stones showed no evidence of fracture by heat. In this trench directly south of the mound a row of post molds was encountered. This row when followed to the south revealed the rectangular pattern shown in plate 30. This structure was 20 feet long and 16 feet wide. The molds, which were well preserved in the hardpan, surrounded a very level and definitely prepared floor. It is designated as Feature No. 21 on the plat. There was a large post mold 9 inches in diameter and 2 feet deep in the center of the structure, probably indicating a roof support. To the south of this was a small fire pit rimmed with baked clay about 0.5 inch thick. At the northeast corner, two post molds, larger than the rest and outside the wall trenches, seemed to indicate a doorway. On the floor at this point two flagstones still remained embedded in the earth. The molds averaged 4 inches in diameter all around the walls, without smaller molds on the corners. The average distance apart of the molds was 3 inches. These posts were set in trenches, as shown in figure 17.

A clay embankment extended approximately three-fourths of the length of the west wall. This bank was 5 inches above floor No. 1 at its highest point and was about 8 inches wide.

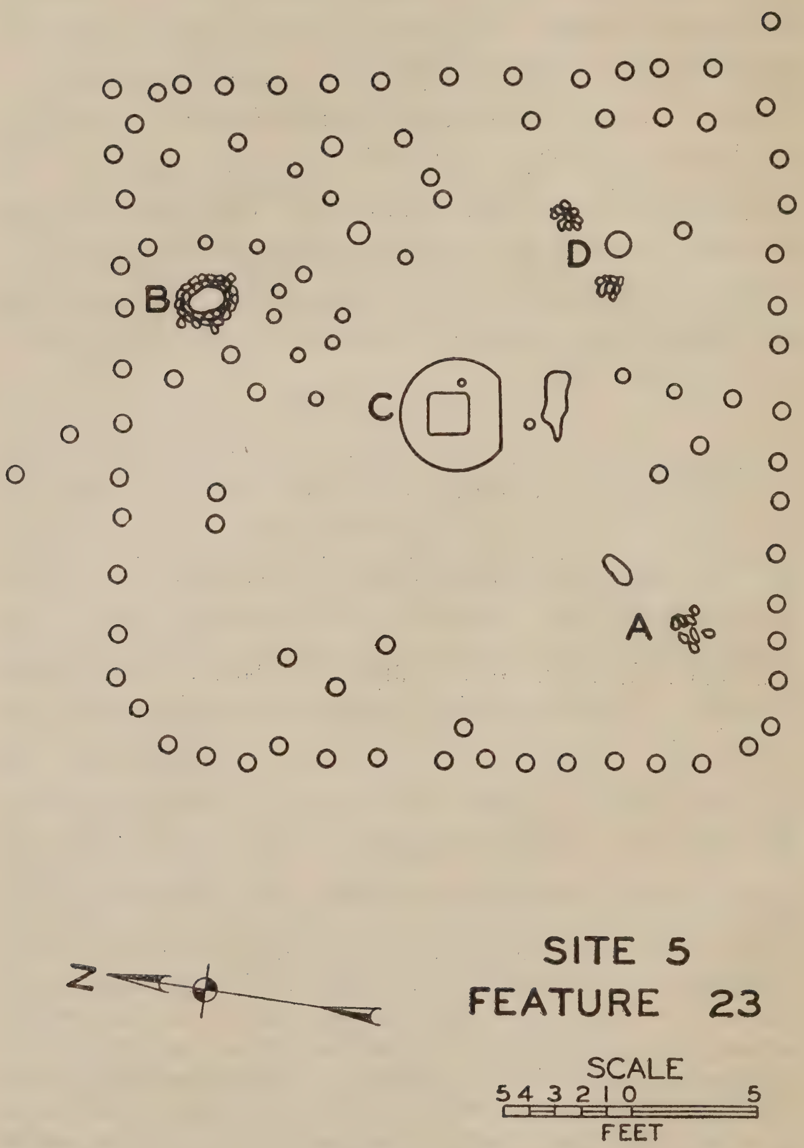

D
B
C
A
SITE 5
FEATURE 23
N
SCALE
5 4 3 2 1 0 5
FEET

Figure 16.

West Trenches

Beginning just outside the earth piled up from the mound excavation, a trench 20 feet wide and 160 feet long was run westward, and

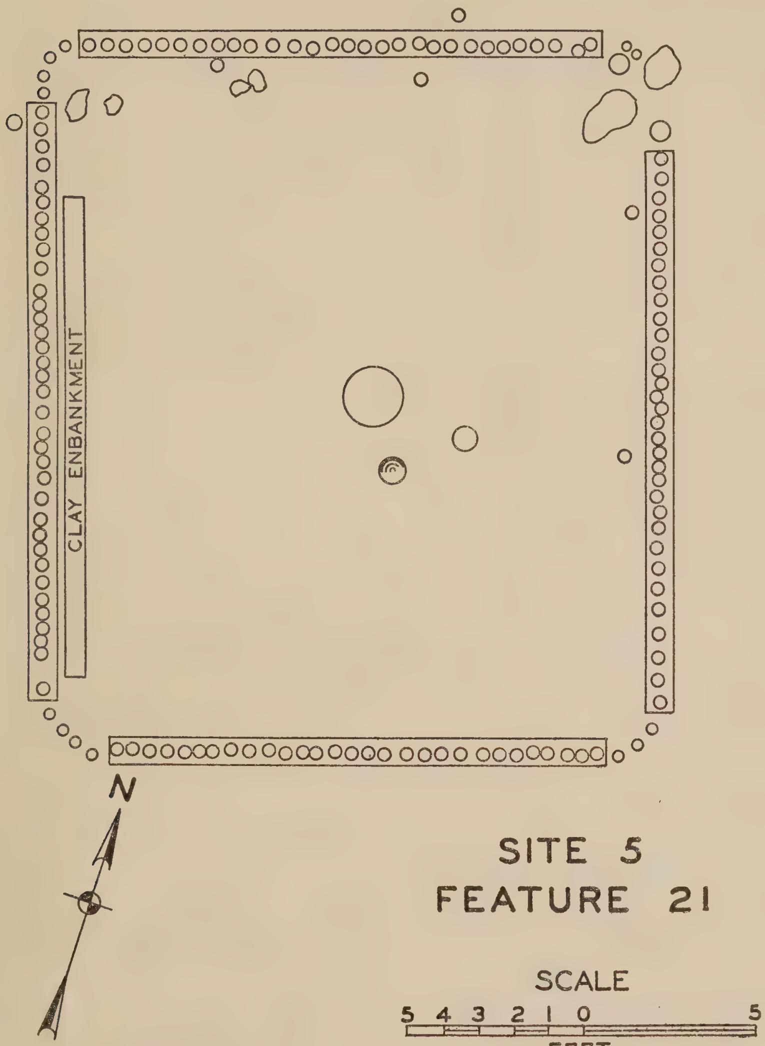

CLAY ENBANKMENT
N
SITE 5
FEATURE 21
SCALE
5 4 3 2 1 0 5
FEET

Figure 17.

various lateral trenches were extended some 150 feet both northward and southward, as shown in the plat (fig. 11). Extensive evidence of a village covering the whole area was found. Scattered and unrelated post molds were numerous. The outstanding feature in the

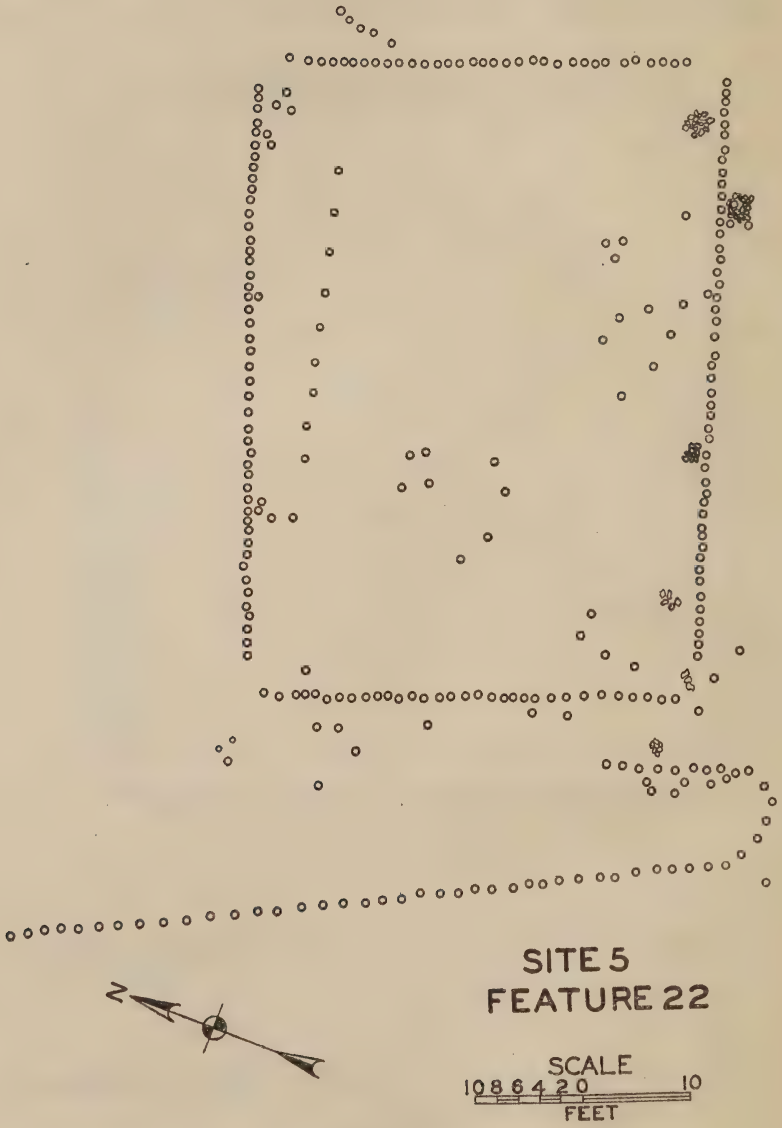

SITE 5
FEATURE 22
N
SCALE
10 8 6 4 2 0 10
FEET

FIGURE 18.

westward trench was a rectangular pattern of post molds, shown in figure 18, and designated Feature No. 22. This rectangular pattern had a length of 59 feet and a breadth of 41 feet. The sides of the structure were nearly parallel to the sides of Structure No. 2. From the size of the area it would seem that it would have been difficult to have built over it a roof sufficiently strong to support the covering of earth customary on large structures. Since these molds were in the hardpan just below the humus line, and since there was no apparent excess of disturbed earth on the site, it seems reasonable to conclude that this structure did not have an earth-covered roof, and perhaps no roof at all. It may have been only an inclosure, serving as an open-air arbor. Its use is conjectural. Because of its size it was hardly to be supposed that it was either a dwelling or a town-house site. At each corner of the post-mold pattern there was a space of about 36 inches in which there were no molds. This may indicate an entrance at each corner.

To the west of this rectangular post-mold pattern, and beginning at a point about 18 feet west of the southwest corner of the structure, a row of 36 post molds was found. These molds extended to the northwest in a straight line 65 feet long. This is indicated on the plat and shown in plate 31, *a.* The northern end of this row of molds terminated abruptly and no amount of excavation revealed further extensions of or further connections with them. The southern end, however, was continuous with a curved line of 24 additional molds, bent eastward, finally becoming parallel with the west wall of Feature No. 22 for a distance of 10 feet. It was distant from the wall only 5 feet, as shown in the plat, figure 18. This mold pattern suggested a gateway at the south end of this construction which may be a portion of a palisade for defense. It is possible that this stockade-like effect may have been only a windbreak.

It is a matter of regret that it was not possible to continue excavation longer at this site in a further attempt to explore this interesting village, which seemed to extend southward and westward to the creek bank. However, a time limit was imposed by the necessity of completing the excavation in time to allow the early spring planting of corn in this very fertile valley. As it was, the owner delayed the planting two weeks beyond the time set, in order that an extension of the trenching might be made, which resulted in the finding of these last features.

ARTIFACTS

The artifacts found on this site are such as usually occur in general excavations of a village. A few shell hoes were found scattered in the center of the mound, and a few simple bone and antler awls and implements were found in the general digging on the village site. A large number of sandstone mortars and pestles were found, together with the usual type of hammerstones made from river pebbles of various sizes and of many different materials. Most of this material was fragmentary, evidently the wastage of the village, and much of it was too crude to be of any special diagnostic value. A few sandstone disks and one limestone discoidal are shown in plate 31, *b*, together with a few of the more perfect celts, made of granite, hematite, and limestone, from the general digging. A few fragments of steatite occurred, which were seemingly portions of broken vessels. Most of the flint material was but little more than crude flakes. Plate 31, *b*, shows the types of projectile points recovered on this site.

Both the amount and the quality of the stone artifacts from this site were very disappointing, as they gave little definite information. All such material, however, seemed to be definitely prehistoric. However, during the excavation of the village site a workman found one small amber bead and another found a button made from a thin embossed sheet of silver, laid on a wooden disk and crimped on the back. Though tarnished by long burial in the earth, the metal took on its former luster after a little polishing. The wooden backing was badly decayed. These objects were found on the village site at an uncertain depth—at the most not more than 14 inches from the surface. They were taken from the earth as it was thrown out on the pile, and, since the land had long been in cultivation, their exact depth at the time of their discovery, if known, would have but little significance.

In the excavation of the mound above the structure referred to as Structure No. 2 a workman shoveled out a copper coin with the bead and button above referred to. This coin, which was much worn, was about the size of our present half dollar. It was taken from a depth of about 18 inches, as nearly as can be determined. Unfortunately, the workman who first found the coin put it in his pocket and did not report it to the field party supervisor until nearly 2 hours later, after a fellow-workman had mentioned seeing the coin. An investigation made immediately by the supervisor seemed to establish the fact that the coin came from a depth of at least 18 inches below the present surface of the mound. It was, seemingly, much too deep to have ever been disturbed by the cultivation of the soil. This depth very closely approximates the old floor level of the secondary (and perhaps the last) structure to have been built on this portion of the mound. It is quite possible, and it is believed highly probable, all facts being considered, that this coin was carried to the floor of this structure by its last owner. It bore on one face, dimly but definitely, the words *E pluribus Unum*, and on the other side a faint inscription which was finally deciphered and discovered to be *Nova Caesarea.*

Several objects were sent to Dr. John R. Swanton, of the Bureau of American Ethnology, for possible identification. Of these objects, Dr. Swanton writes:

> The coin was readily identified as having been minted by the State of New Jersey, of which *Nova Caesarea* is an old name. The date is 1787, but there must have been many others, as a good specimen is valued only at 25 cents. It may have been brought into the country in 1788 when Governor Sevier was engaged in warfare with the Cherokee and burned many of their towns. I do not know how to place the other two objects.

It is to be regretted that it was not possible to have had a more exact knowledge of the level at which this coin was found. However, it is difficult to escape the conclusion that this coin was carried onto this site after 1787, and probably carried on the floor of this town house by some men, red or white matters not, *before* the town house with its earth-covered roof collapsed to bury it 18 inches or more below the top of the mound. The important possibility certainly presents itself that this town house was open and the floor was accessible to someone in 1787 or thereafter. The suggestion seems to point to a comparatively late occupancy of this site by its builders.

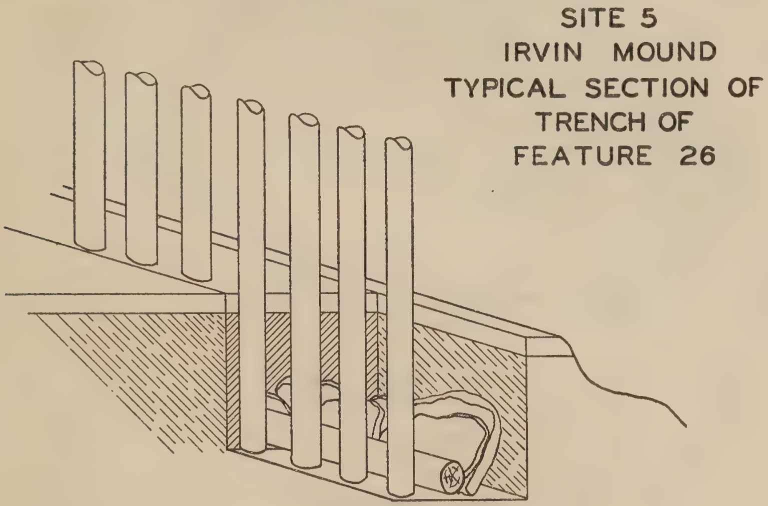


FIGURE 19.

POTTERY

The pottery from this site seems to be characterized by vessels of utility of fairly large size. It is all shell tempered and of medium to coarse texture. These large vessels are true pots, and, as to decoration, fall into three classes: plain, textile marked, and cord paddled. The textile-marked sherds seem to be characteristic "salt pans" of large diameter and straight walls, with the usual range of weave impressions. Plate 32, *a*, shows a textile-marked sherd of large mesh. The warp strands are 1¼ inches apart and are twined about three-ply plaited woof strands as large as three-eighths of an inch in diameter. This vessel shows a diameter, as measured from this sherd, of over 25 inches.

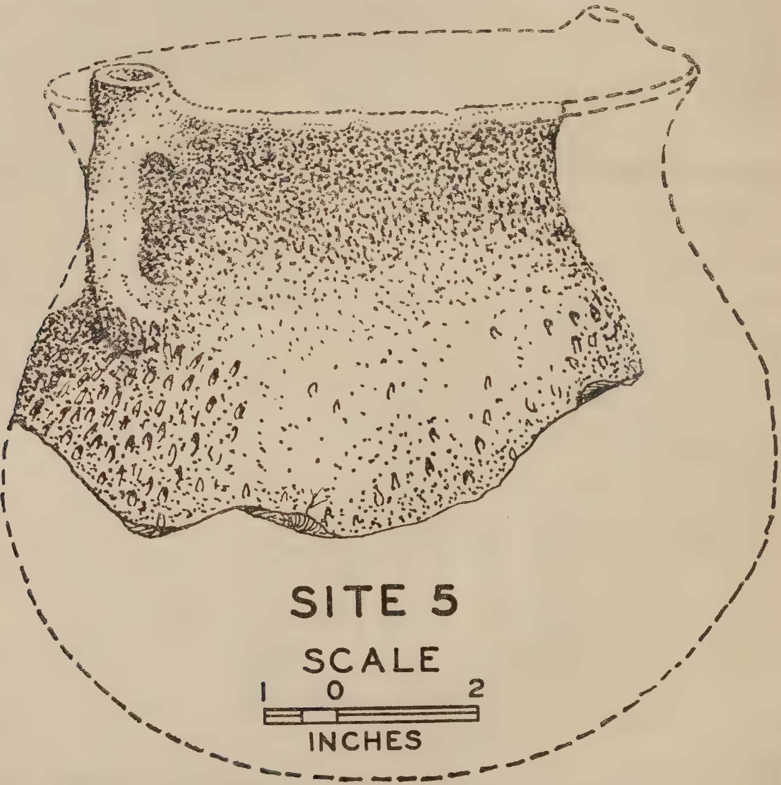


FIGURE 20.—Drawing restoration of large vessel.

Most of the larger plain and paddle-marked pots show a slightly flaring rim with round handles, as shown in plate 32, *b*. Many of these handles rise above the rim of the vessel and terminate in a single or double lobe. Some handles are further decorated on the outside face with pits or lobes.

Figure 20 is a drawing restoration of a large vessel typical of this site. This restoration shows a true pot, 11 inches outside diameter and 9 inches high, with a mouth 9 inches in diameter.

The preservation of sherds on this site was fairly good, but many had become very soft and had lost all shell content.

Plate 32, *a*, shows a number of rare forms found on this site. A few sherds of polychrome ware of lightweight gray clay with yellow slip were found. The sherd in lower left-hand corner of plate 32, *a*, is a type of very heavy grit-tempered hard ware. The marking seems to be a textile impression but not a twined weave. The sherd shows a straight wall with unmodified lip. In both material and decoration it appears foreign to this site.

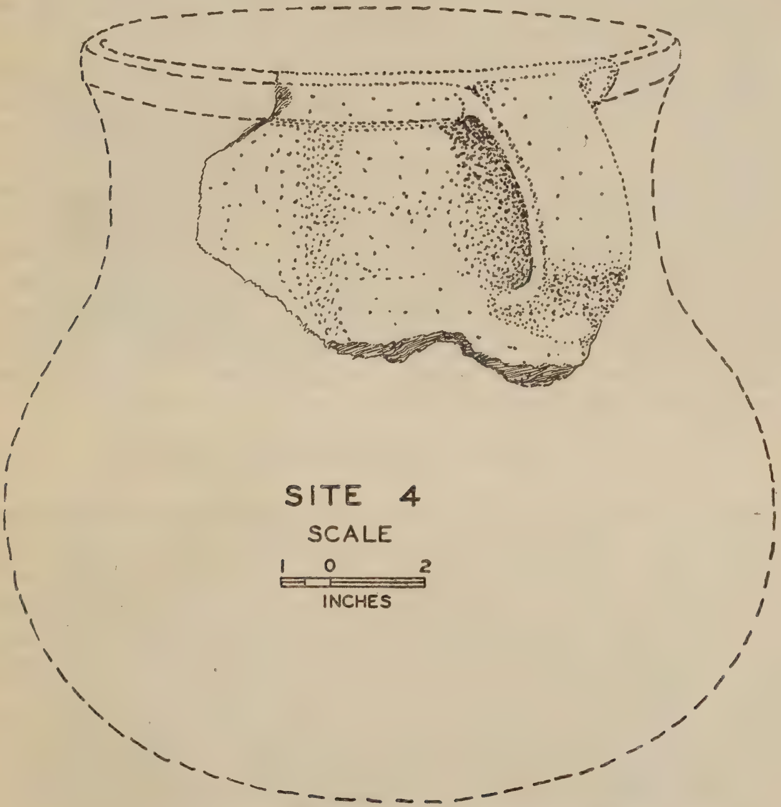


Figure 21.—Drawing restoration of large vessel.

One rim fragment of a heavy sandstone vessel 1½ inches in thickness was found showing long chisel marks. This vessel seems to have been cut from solid stone after the manner of the manufacture of a steatite vessel, and has the usual lug below the rim. A few fragments of steatite vessels were found.

Conclusions

From the evidence presented, Site No. 5 is obviously a village site which seems to have been occupied by dwelling houses before the central mound was erected. The rectangular houses were made of small logs, lashed together at the top and probably thatched with cane and grass. There seems to have been no evidence to show that they were covered with earth. Later, town houses were built on the village site, on ground formerly occupied by dwellings. These town houses were of the "small-log" type. The wall logs were set in trenches and bent and lashed together at the top. They were earth-covered so that the mound grew in height with the collapse of each successive building on the site. While the construction here was quite like that reported from Site No. 2, yet it differed from it in one character which was found only on this site, namely, the use of stone in trenches. This feature of the construction is illustrated in figure 19. Beside the horizontal log at the bottom of the trench, large stones were also placed in the bottom of the trench, outside the structure, to brace the horizontal log. This construction was used in whole or in part on three of the four town houses associated with this mound. The only one in which stones were not used had a subterranean floor, and the logs were set in the hardpan.

Site No. 6.—HILL FARM STONE MOUNDS

Harvey Hill farm is on the north side of Clinch River about three-fourths of a mile south of Rule, Union County, Tenn.

This site is interesting because of the presence of three small mounds made of earth and stone. Mound No. 1 is about 900 feet north of Clinch River. Mounds Nos. 2 and 3 are about 500 feet distant from the river and some 400 feet southeast from Mound No. 1.

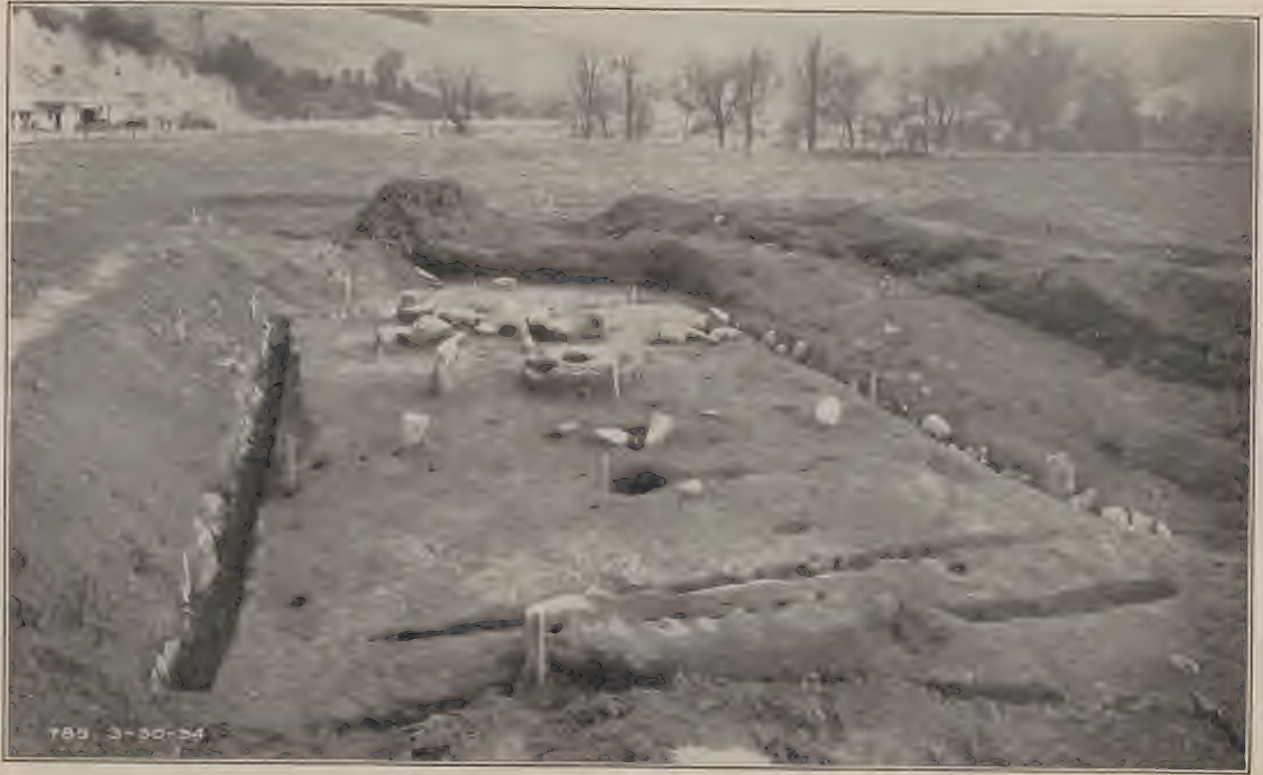
Mound No. 1 had been built up of earth and limestone slabs. It was circular, about 26 feet in diameter, and had been very much disturbed. Local residents reported that it had been dug into several times. In a test pit 10 feet wide and 11 feet long, sunk to the disturbed depth of 5 feet, the humus line was found to be 36 inches below the original mound surface.

Mound No. 3, also made of earth and stone slabs, had been practically destroyed by cultivation. Its existence was shown only by midden soil about 6 inches deep and scattered stone slabs.

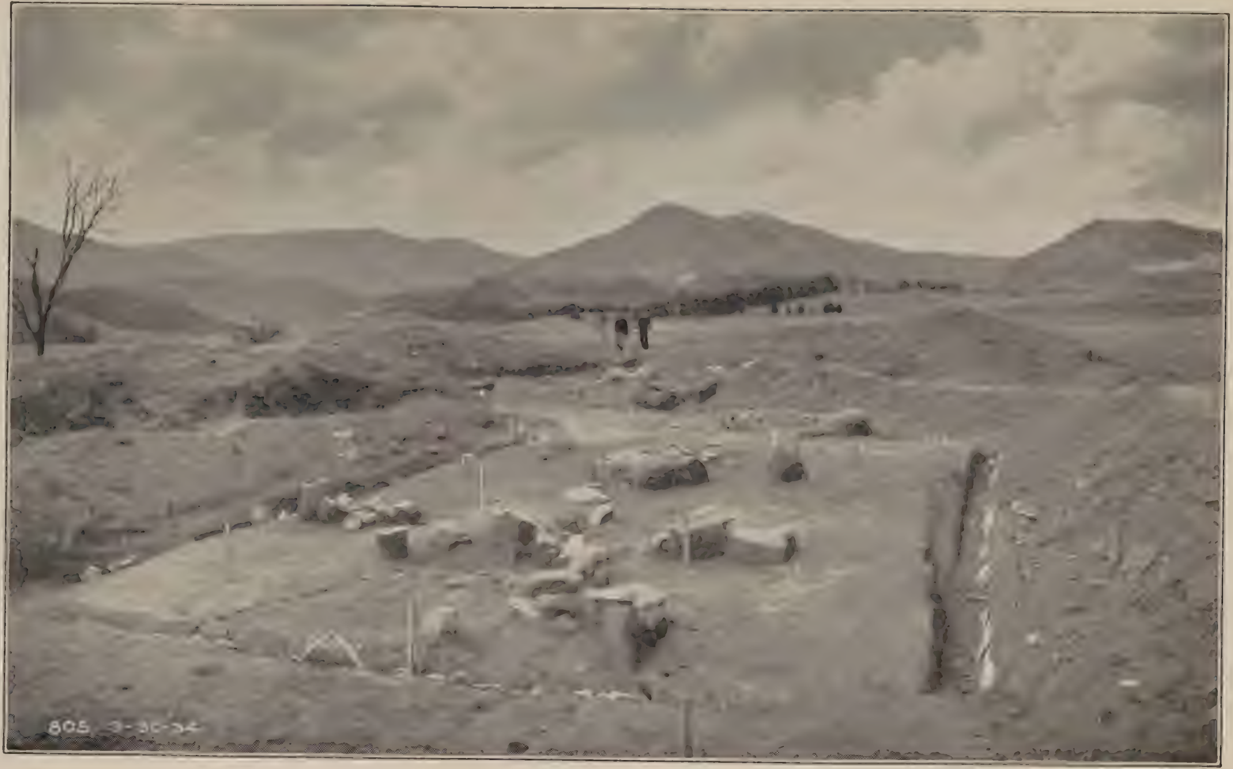
Mound No. 2 was a circular mound about 40 feet in diameter and about 2½ feet deep. The mound was on the line of a rail fence and, because of three large cedar trees growing on its surface, it had been

a. Irvin Village Site at Caryville, Tenn. Site No. 5.

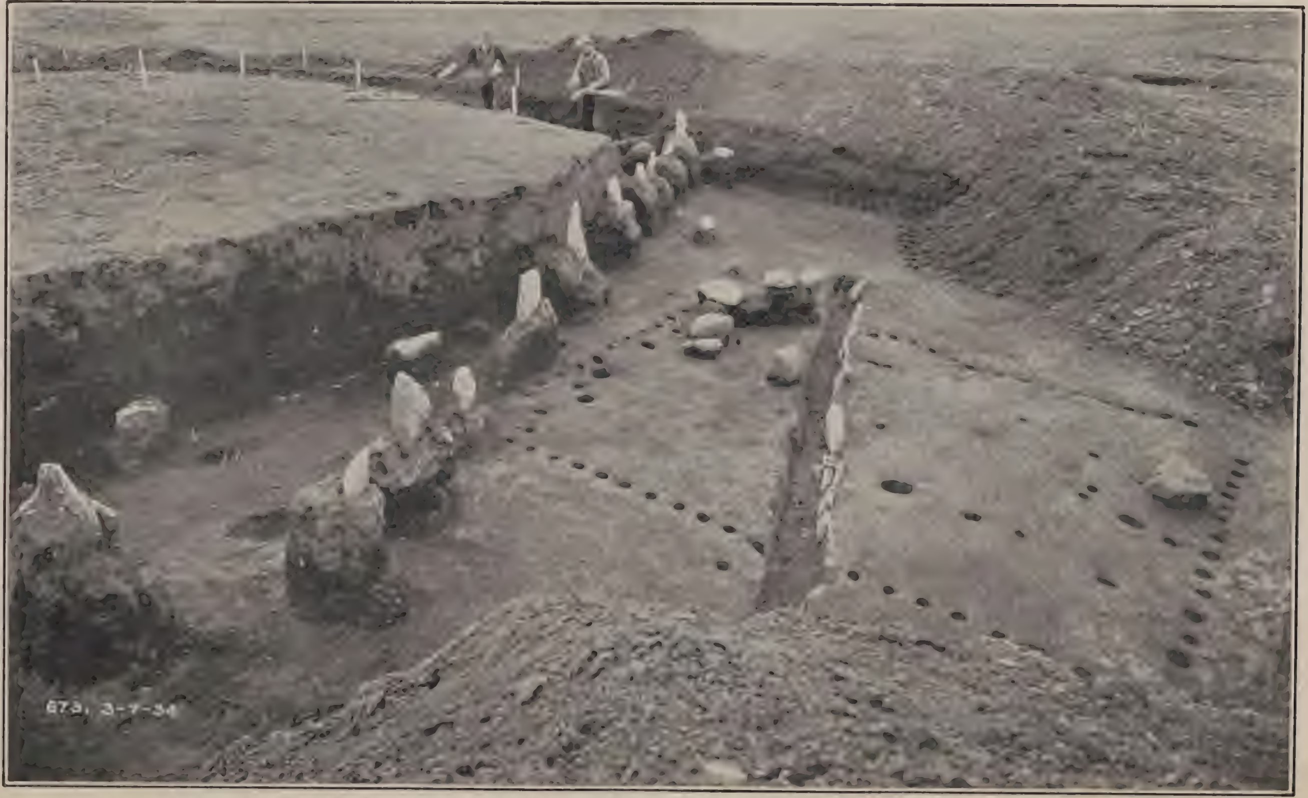
b. Central Mound, Site No. 5. (Five men mark the extent of the site.)



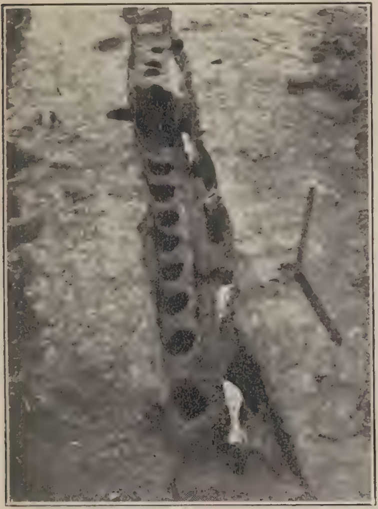
Trenches marking walls of Structure No. 1, Feature No. 26, Site No. 5



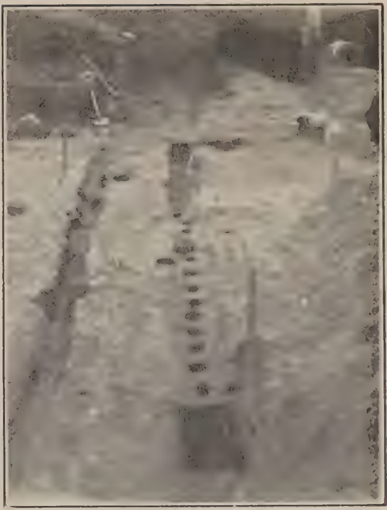
Structure No. 1, Feature No. 26 ,Site No. 5. (Note rock in trenches against outside edge.)



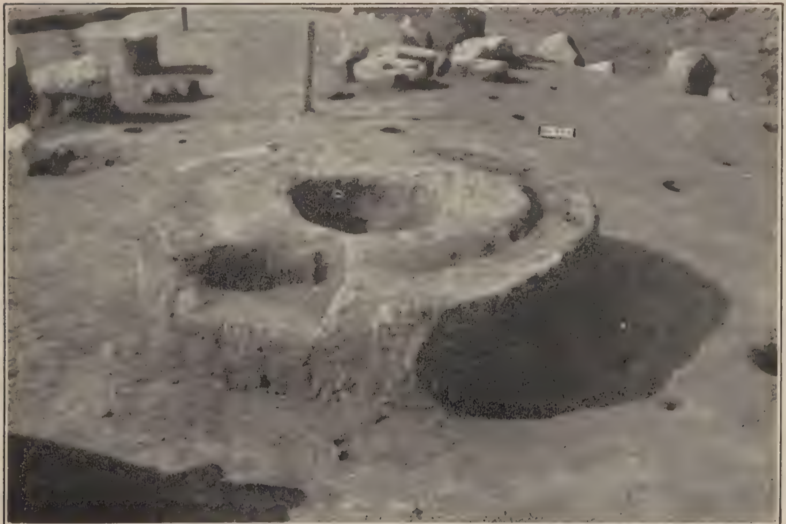
Line of large rocks marking site of secondary structure, Feature No. 1, Site No. 5. (Note post-mold pattern of dwelling house under mound.)



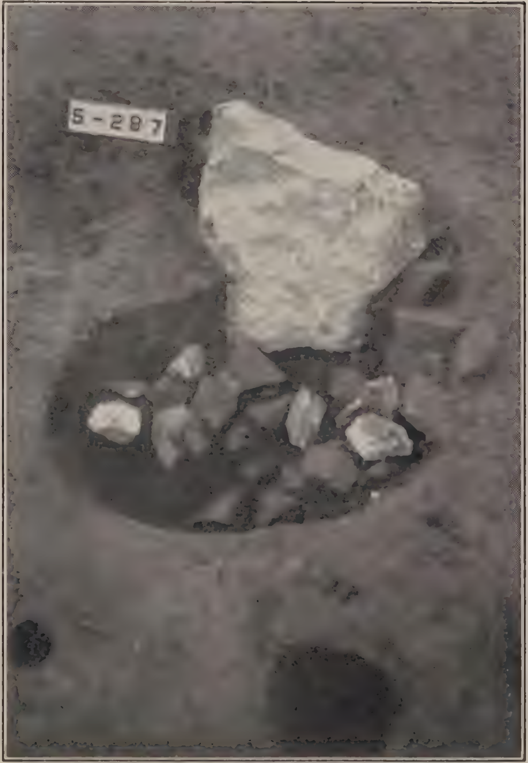
a. Horizontal mold between vertical molds and line of stones on outside wall of trench. Structure No. 1, Site No. 5.



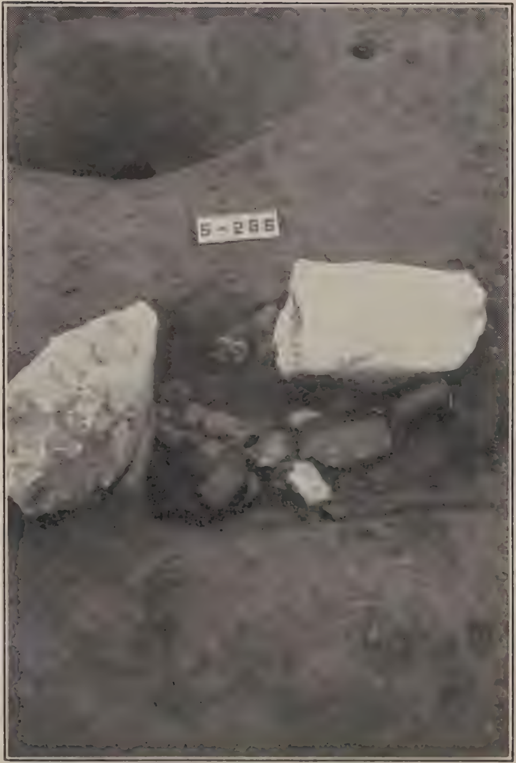
b. Humus-filled trench contiguous with post molds in clay. Secondary floor, Structure No. 1, Site No. 5.



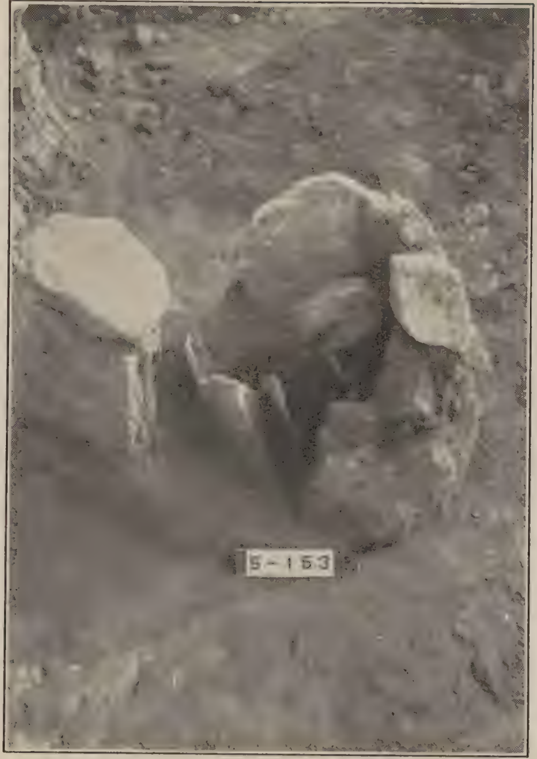
c. Central fireplace. Feature No. 15, Structure No. 1, Site No. 5.



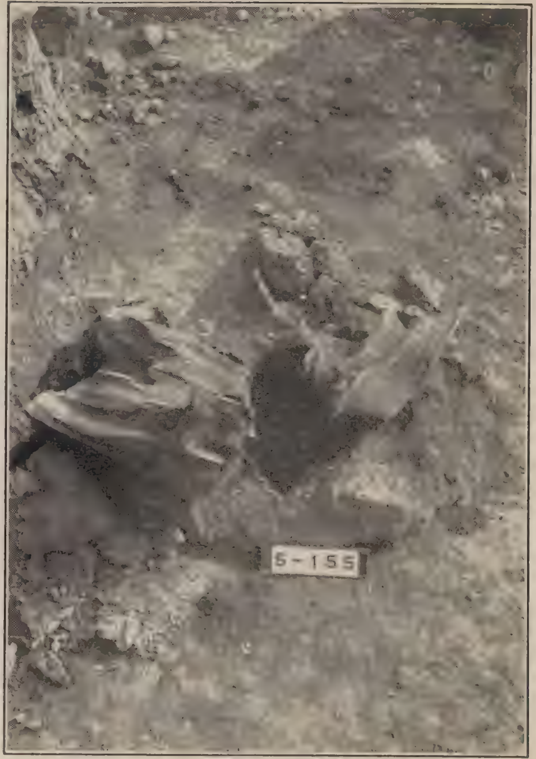
a. Pit with broken stones in ash bed. Structure No. 1, Feature No. 29, Site No. 5.



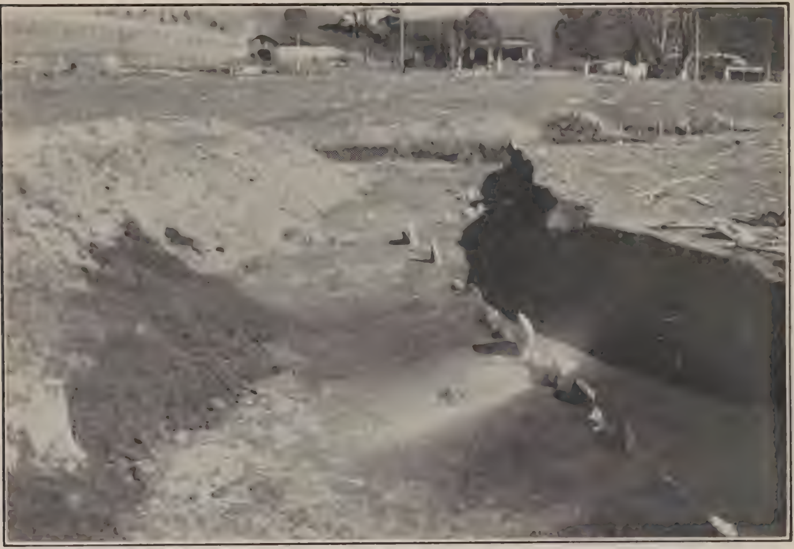
b. Pit with broken stones in ash bed. Feature No. 30, Structure No. 1, Site No. 5.



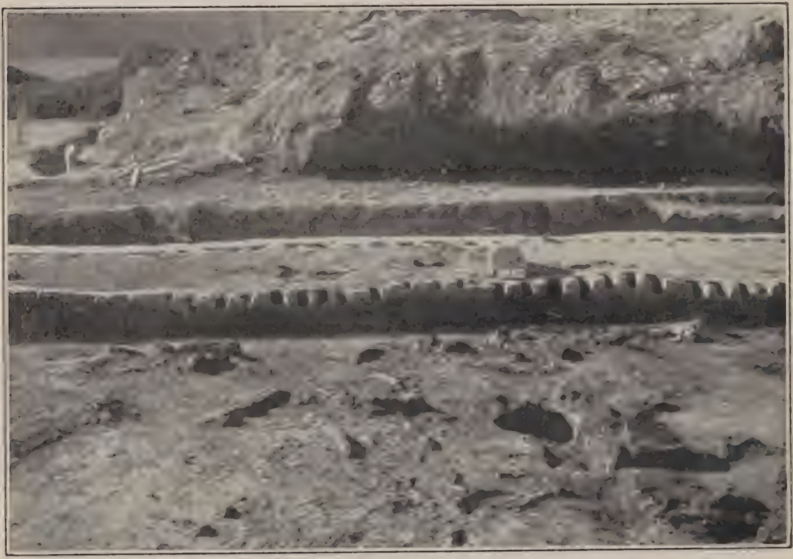
a. Base of cedar post in center of circular layer of stones. Structure No. 1, Site No. 5.



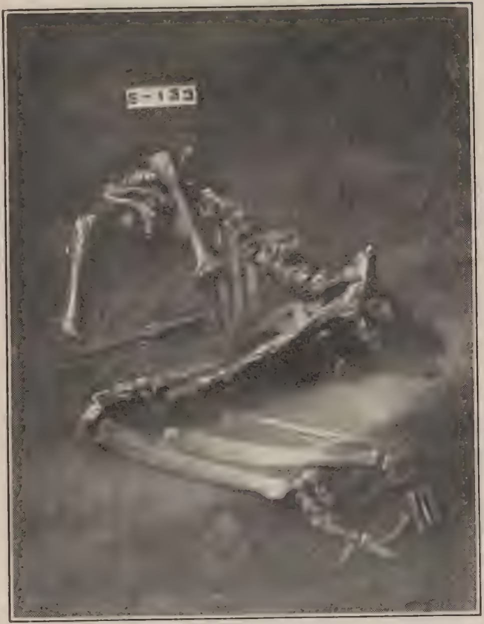
b. Circular layer of stones with post removed. Structure No. 1, Site No. 5.



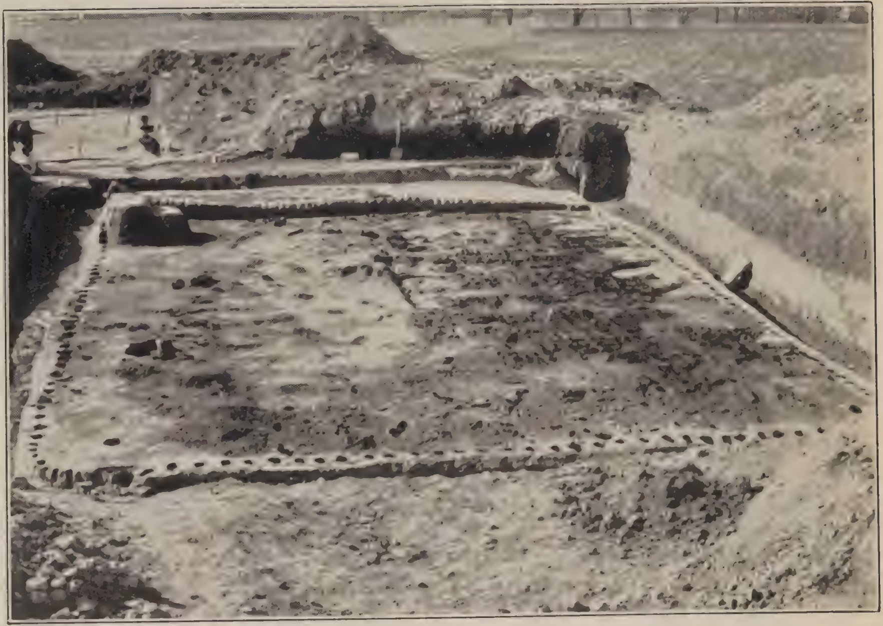
a. Line of stones. Feature No. 9, Site No. 5.



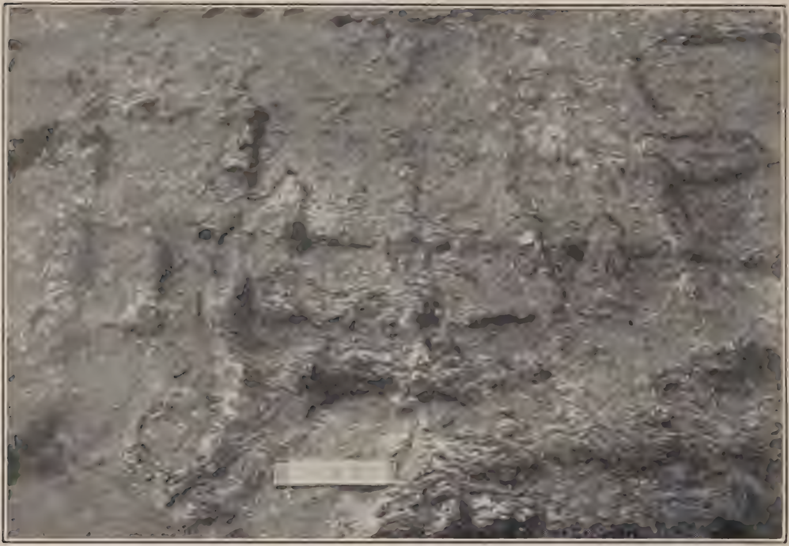
b. Line of post molds above primary floor. Structure No. 2, Feature No. 25, Site No. 5.



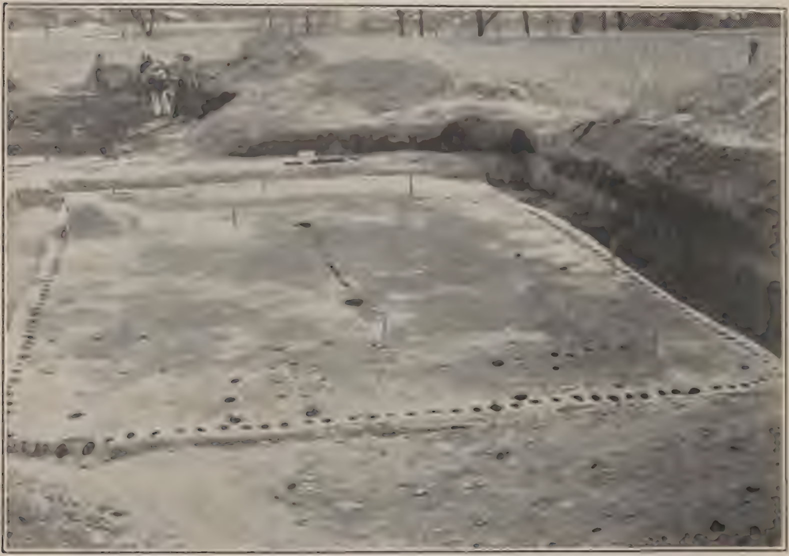
a. Burial with stones removed. Burial No. 2, Site No. 5.



b. Burned structure on primary floor. Structure No. 2, Site No. 5.

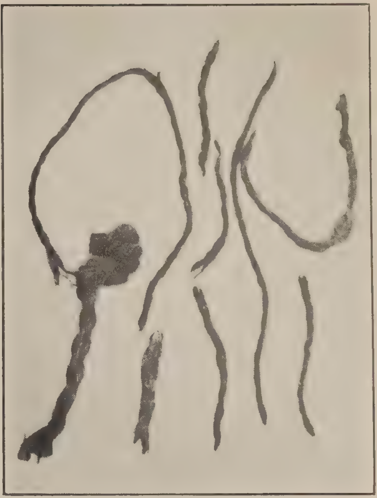


a. Close-up of charred roof, showing grass and split cane on top of logs. Structure No. 2, Site No. 5.

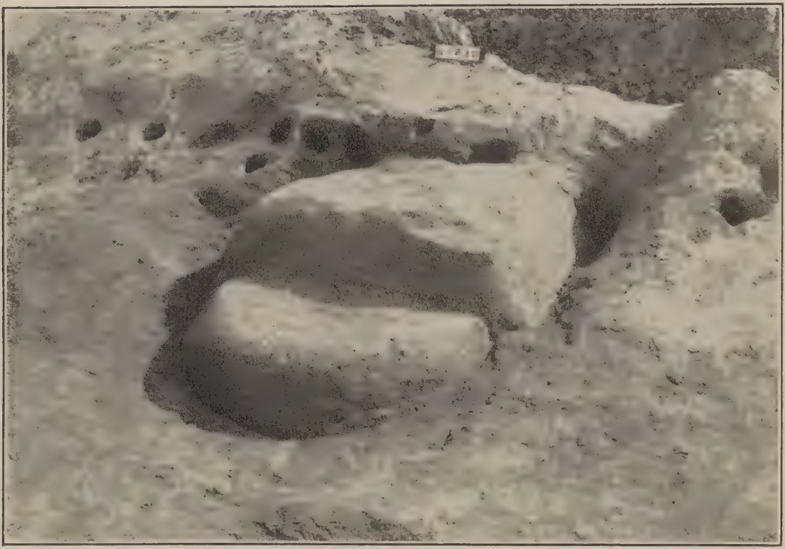


b. Primary floor, charred structure removed. Structure No. 2. Site No. 5.

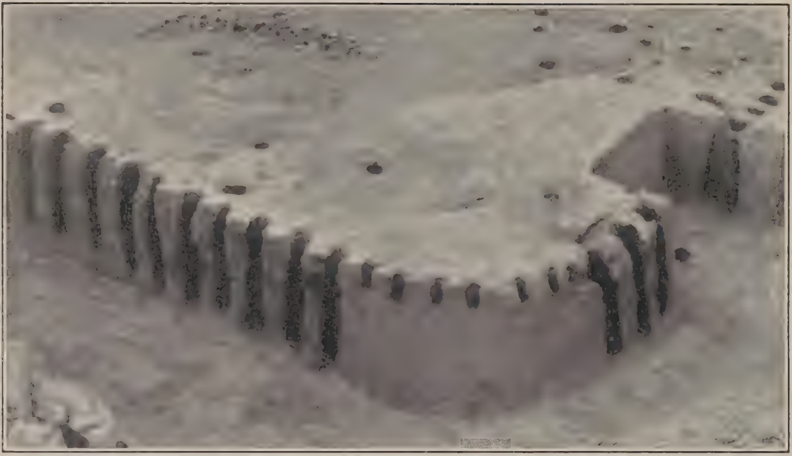
a. Line of old excavation into hardpan. Primary floor. Structure No. 2, Site No. 5.



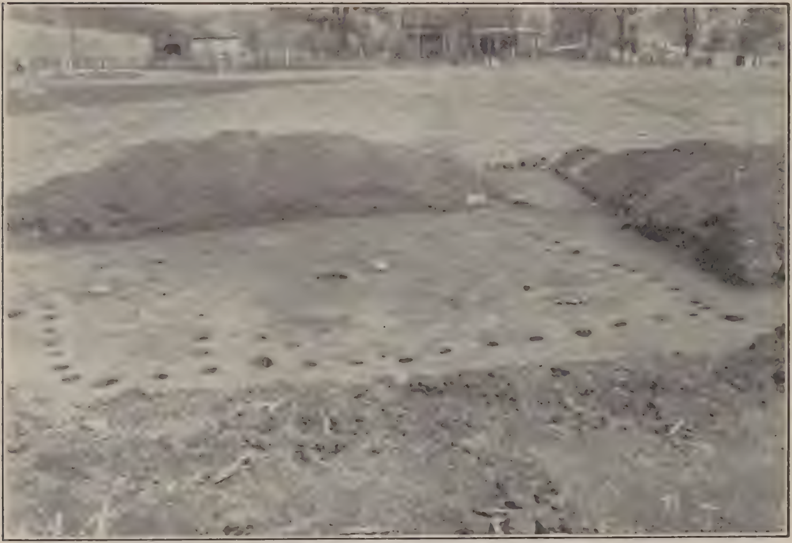
b. Charred strings from roof of Structure No. 2, Site No. 5.



c. Seat of clay, partially uncovered. Structure No. 2, Feature No. 24, Site No. 5.



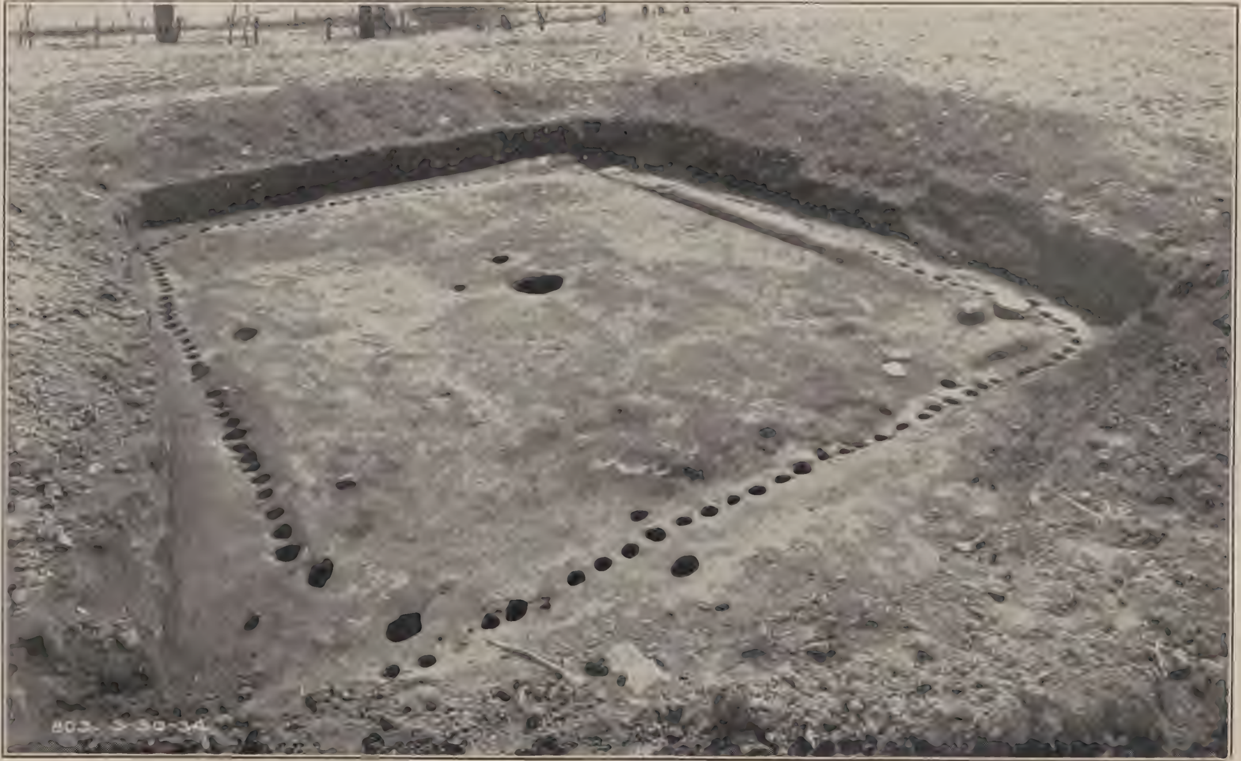
a. Longitudinal section of molds around northeast corner of primary floor. Structure No. 2, Site No. 5.



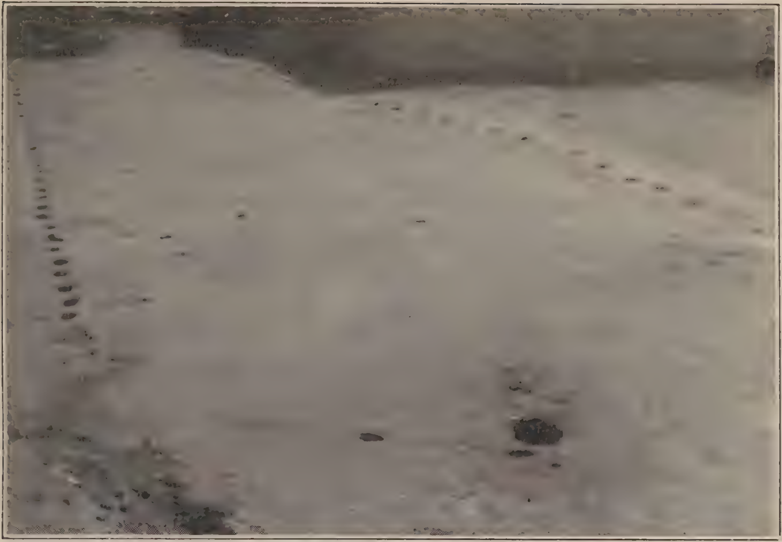
b. Rectangular post-mold pattern in north trench. Feature No. 23, Site No. 5.

a. Stones placed in floor of grave pit. Burial No. 1, Site No. 5.

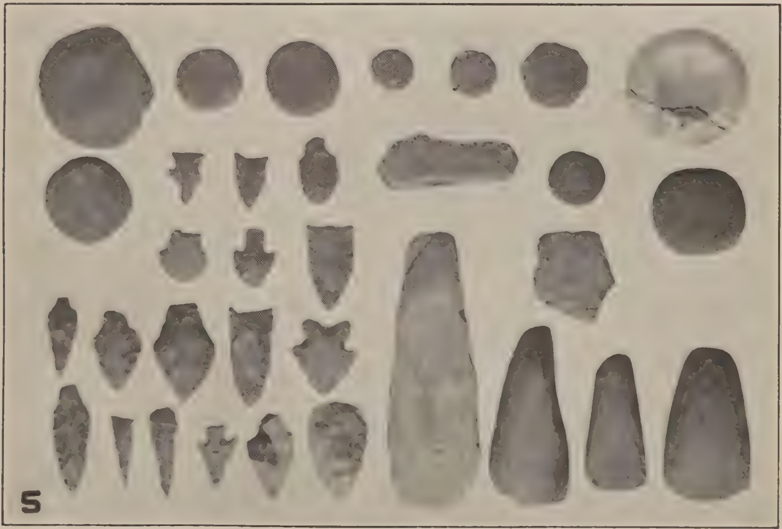
b. Circular fireplace in structure. Feature No. 23, Site No. 5.



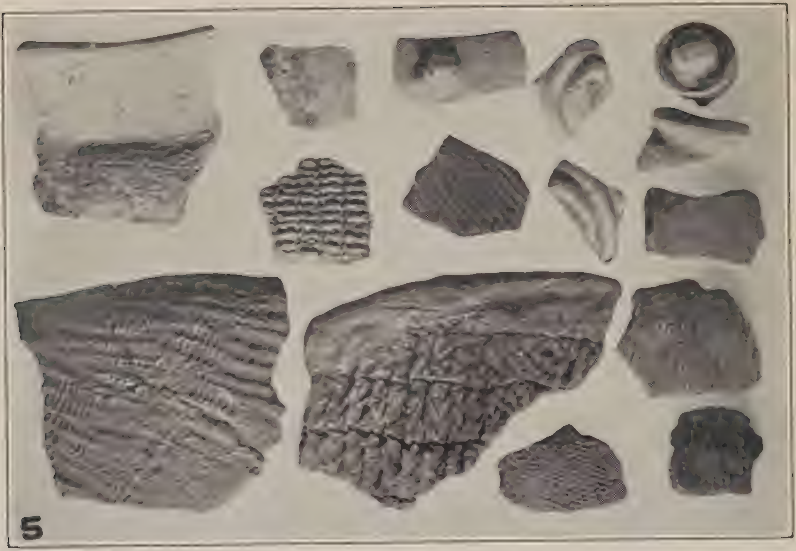
Rectangular structure in south trench. Feature No. 21, Site No. 5.



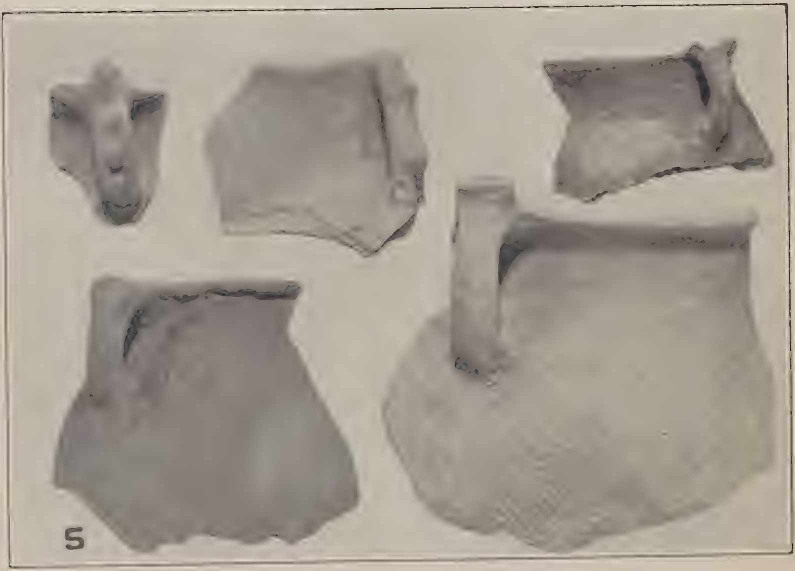
a. West trench. Feature C, Site No. 5.



b. Stone artifacts. Site No. 5.



a. Miscellaneous sherds from the general digging. Site No. 5.



b. Variations of loop handles on jar B, from general digging. Site No. 5.

saved from cultivation and the tree roots had discouraged its exploitation. It was built of earth and contained limestone slabs. Excavation revealed a well-defined floor of a structure outlined by the usual post-mold pattern. On this floor there was a central altar and a clay seat against the south wall. The floor was composed of sand and clay mixed and was 2 inches thick. It was well indurated and cracked by numerous tree roots growing underneath it. Below the clay floor there was an even layer of humus about 4 inches thick which contained many fragments of chert. The post-mold pattern shown in figure 22 indicated a structure 31 feet long by 24 feet wide. On this prepared clay floor split-cane impressions indicated the use

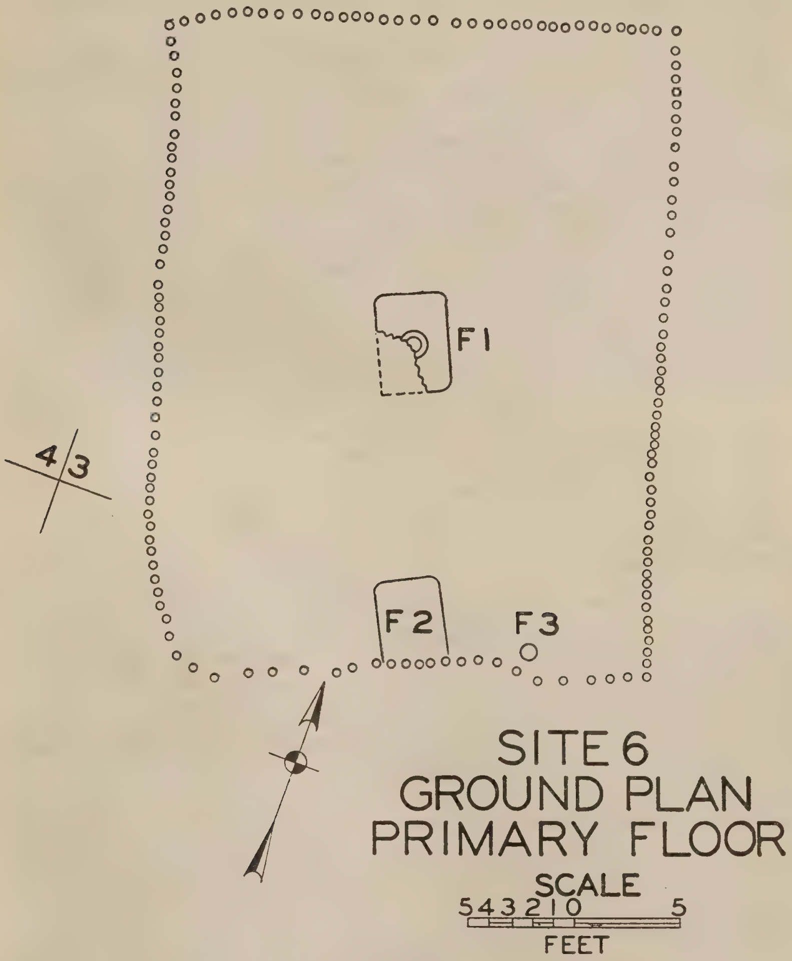


FIGURE 22.

of a cane matting. Plate 33, *a*, shows this floor with seat and altar. The seat shown in plate 128, *b*, was made of hard clay and was set in the middle of the southeast wall of the structure and built up against it. The dimensions of this seat are shown in figure 23. Since this seat rested on a layer of midden soil 1 inch thick it would seem that its construction had been subsequent to the laying of the floor.

The clay fireplace or altar was a rectangle, 52 inches by 40 inches, with rounded corners. It was raised 2 inches above the floor level and had a central concave basin 18 inches in diameter. The whole fireplace had a smooth surface and was well-made and hard-burned. The basin, which was about 5 inches deep, was filled with white ashes.

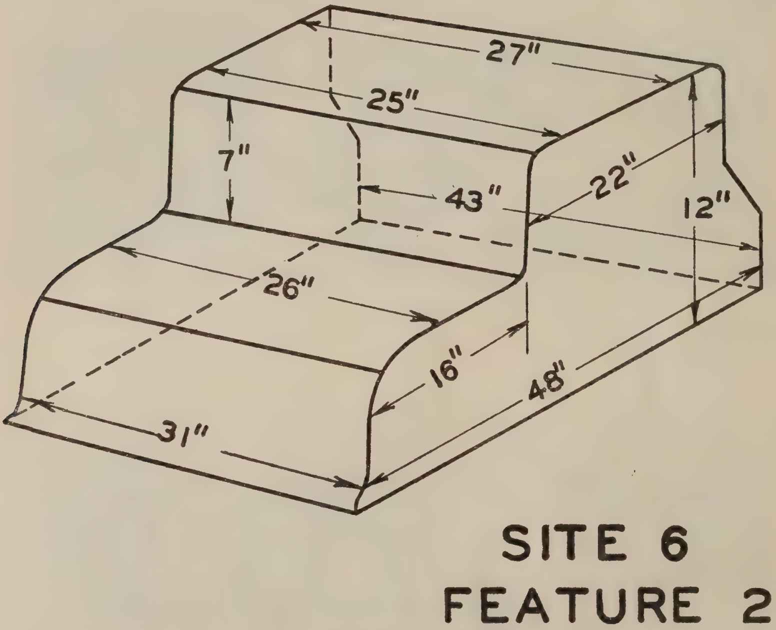
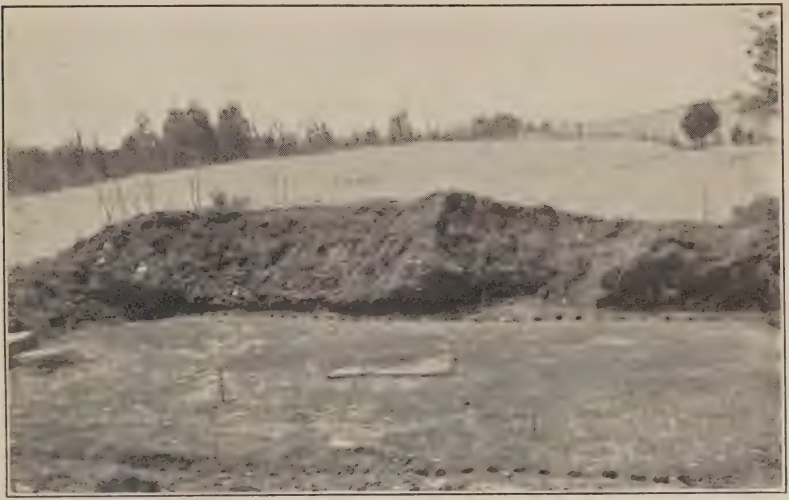
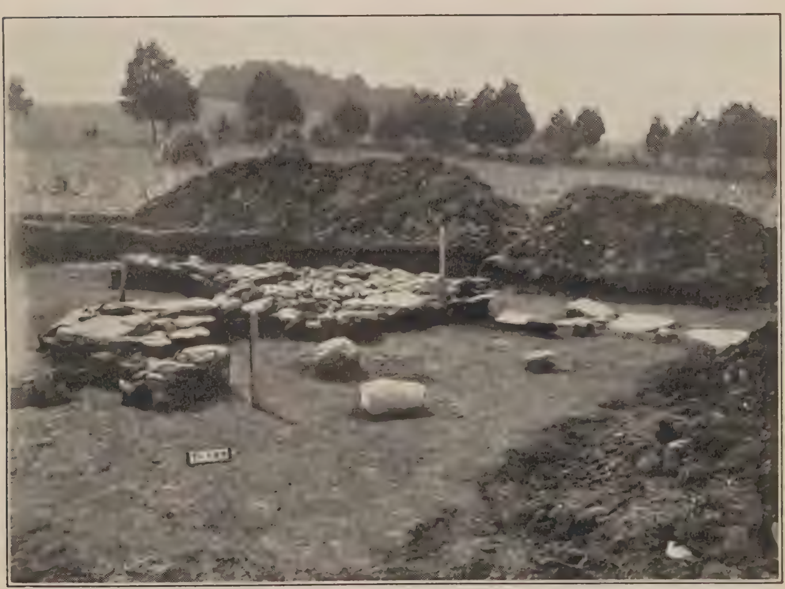


FIGURE 23.

The floor of the mound was covered by the remains of a partially burned structure which had collapsed. Plate 134, *a*, shows a portion of this burned structure resting on the clay altar. This material consisted of small poles with cane and grass thatching. The only other feature on the floor of this structure is indicated as Feature No. 3 on the plat, figure 22. This was a small pit, 10 inches in diameter and 10 inches deep, completely filled with several hundred unperforated gastropod shells.



a. Post-mold pattern, seat, and altar. Mound No. 2, Site No. 6.



b. Stone on primary floor. Site No. 7.

ARTIFACTS

One perforated shell hoe was found in the excavation of Mound No. 2. Besides this, only a small quantity of potsherds was found. All sherds were shell-tempered, of coarse texture, and were mostly plain. A few showed cord markings. All were in a poor state of preservation.

CONCLUSION

Mound No. 2 of this site thus appears to be a typical "small-log" town house with seat and altar. This would suggest a village on the surrounding area. None was found beyond the evidence of Mounds Nos. 1 and 2. It would seem that they may have represented burial mounds—graves in stone, covered with earth. However, their destruction had been too complete to draw any definite conclusions. Perhaps the most that can be said is that Site No. 6 represents the remains of a small community, seemingly closely related to Sites Nos. 2 and 5.

SITE No. 7.—WILSON FARM MOUND

The Wilson farm is on the south side of Clinch River, about 1¼ miles south and east of Site No. 6. It is on the opposite side of Clinch River.

This site consists of a single earth-and-stone mound about 300 feet from the bank of the river. The site had been in cultivation so long that the mound had been reduced to a height of 18 inches above the level of a hard-burned floor which was composed of dark loam and sand. The mound had evidently been circular but the diameter could not be determined because the outer edge of the floor had been disturbed by the plow. In and near the center of the mound a considerable area was floored with large flat stones, as shown in plate 33, *b*. It is believed that the scattered stones found nearby had been dislodged and moved from the central area of cultivation. Under this pile of stones and on the mound floor, but raised 6 inches above it, was a circular fireplace 3½ feet in diameter. This fireplace was made of clay, evidently brought in for the purpose. The surface was smooth and there was a slight concave depression in the center. There was no evidence remaining of any structure on this site and no other features. Figure 24 shows the probable extent of the mound, the area excavated, and the remaining floor, with stone pile.

POTTERY

A very small quantity of sherds was obtained from this excavation. These show that textile-marked, cord-impression, and plain ware were used. All were of rather coarse texture, shell-tempered. The scarcity of artifacts was due to the almost complete destruction of the site by cultivation.

CONCLUSION

From the potsherds found on this site it would appear that Site No. 7 is related to Site No. 6 just north of it on the opposite side of the river. It may in fact have been an extension of the same village.

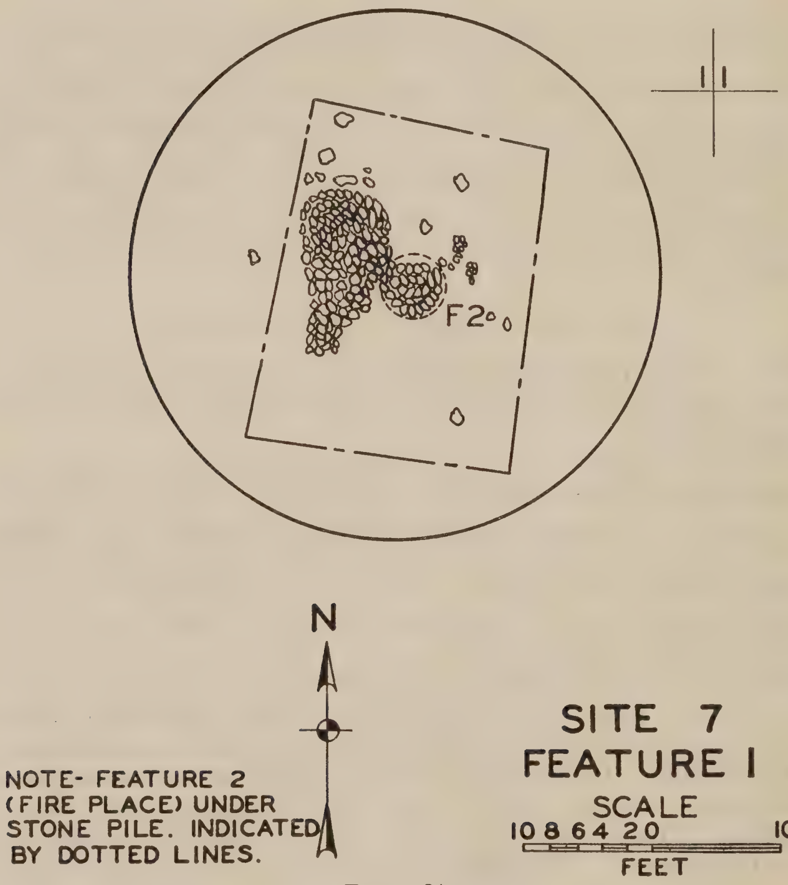

F2
N
NOTE- FEATURE 2 (FIRE PLACE) UNDER STONE PILE. INDICATED BY DOTTED LINES.
SITE 7
FEATURE I
SCALE
10 8 6 4 2 0 10
FEET

FIGURE 24.

SITE NO. 8.—RICHARDSON FARM MOUND

The Richardson farm is about 0.5 mile south of Agee and lies on a high level ridge of land between the Clinch and Powell Rivers overlooking their confluence (fig. 25). The topography of the country is in the nature of low rolling foothills, the slopes of which are badly eroded. The crests of the ridges are mostly cleared and in cultivation. This site is marked by the presence of a single mound, situated in a level plowed field, which has been in cultivation for more than half a century. There was no other evidence of prehistoric occupation. There was no midden material noticeable in the field and the present owner states that he had no knowledge of any such evidence having been brought to light during the cultivation of this field.

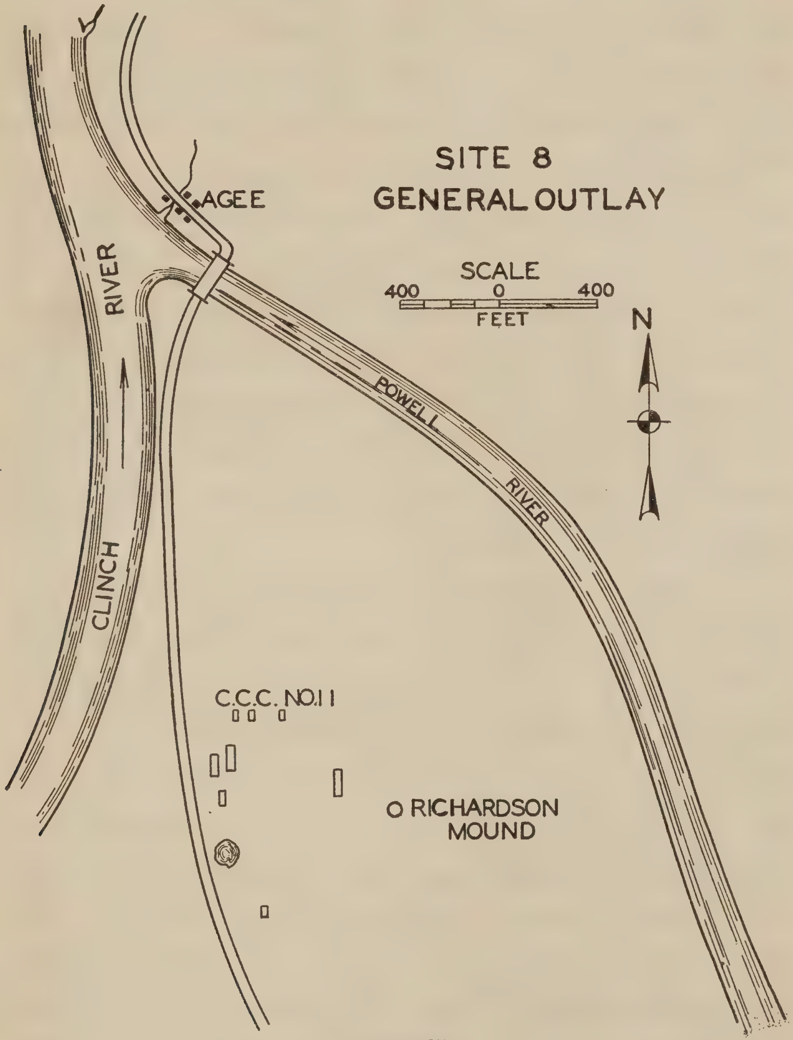

SITE 8
GENERAL OUTLAY
SCALE
400
0
400
FEET
N
AGEE
CLINCH
RIVER
POWELL
RIVER
C.C.C. NO. 11
O RICHARDSON
MOUND

FIGURE 25.

The mound was approximately 60 feet in diameter and about 5 feet high. It was impossible to determine its original size and shape because of erosion. The humus line was poorly defined under a primary floor. The excavations here revealed that there had been at least three structures erected on this site, each having a post-mold pattern and a prepared floor. Evidence of a tertiary floor was encountered about 1 foot below the apex of the mound. This floor was badly torn up by the plow and it was impossible to follow it with sufficient exactness to make sure of its extent or to locate the structure which may have been upon it.

A secondary floor was discovered 14 inches below the tertiary floor. This floor revealed a rectangular post-mold pattern 24 feet by 30 feet, as shown in figure 26. The north side of this pattern was made up of three lines of molds at the eastern end of the wall. It is possible that a portion of this pattern, as well as a portion of the south wall, may be due to the extension of posts of the tertiary structure down into the secondary floor. This point was difficult to determine because of the disturbance above this level. Plate 35, *a*, shows this secondary floor 34 inches above the primary floor. In the secondary floor was an elliptical pit, 8 feet 7 inches by 28 inches and 18 inches deep, near the east end of the structure. This pit was well defined with hard-baked bottom and sides which were cracked as if by heat. (Pl. 36, *a*.)

At the base of the mound the primary floor with rectangular post-mold pattern was uncovered, as shown in plate 34. This structure was 25 feet by 35 feet. The floor plan is shown in figure 27. This building was constructed in the usual way, i. e., by excavating four trenches for the reception of the base ends of vertical posts. Horizontal molds inside the structure at the top of the trenches and outside the structure at the bottom of the trenches, as shown in plate 36, *b*, were made by the decay of logs laid horizontally to brace the vertical posts. The plat of the floor shows that the trenches stopped before reaching the corners. These trenches were 12 inches wide and 14 inches deep. The primary floor, shown in plate 35, *b*, extended beyond the structure walls about 2 feet. Plate 35, *c*, is a view of the southeast corner of the primary floor, showing a cross section of the vertical post molds in the trench and, at a lower level and outside, horizontal log molds. The figure also shows the shallow small molds at the corner, arranged in an arc. In this picture (pl. 35, *d*) another corner of this structure is shown, illustrating how the small stakes at the corners were driven into the floor.

On the primary floor and centrally located almost against the east wall was a clay seat. The base of this seat was 6 feet 6 inches. It was 24 inches broad and had a vertical thickness of 12 inches. This seat was made of baked clay. While definitely formed, it was not much harder than the clay of the mound surrounding it, and the top section of this seat, which was but a few inches higher than the base, was cut away by workmen before its nature was discovered. A thin layer of charcoal on the floor below the seat shows that the floor had been used before the seat was built.

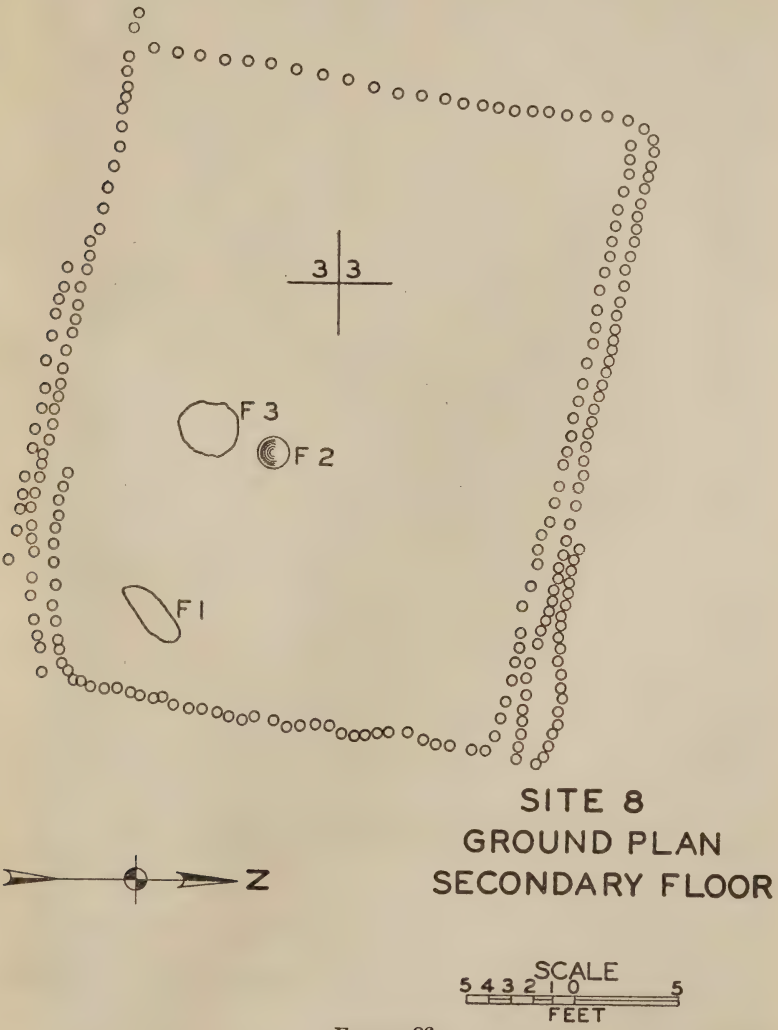


Figure 26.

Near the center of the structure was a circular baked fireplace, 5 feet in diameter, which was raised 2 inches above the floor level. In it were two small pits 8 inches in diameter.

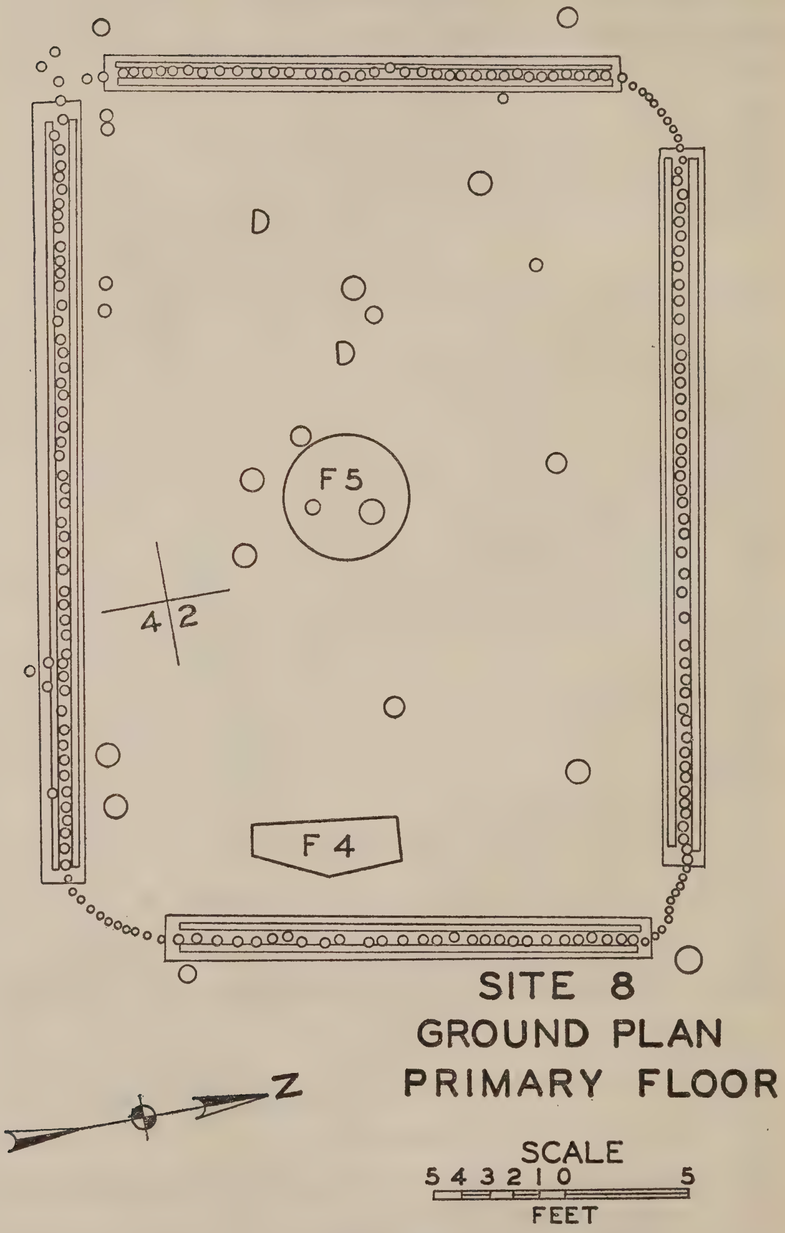
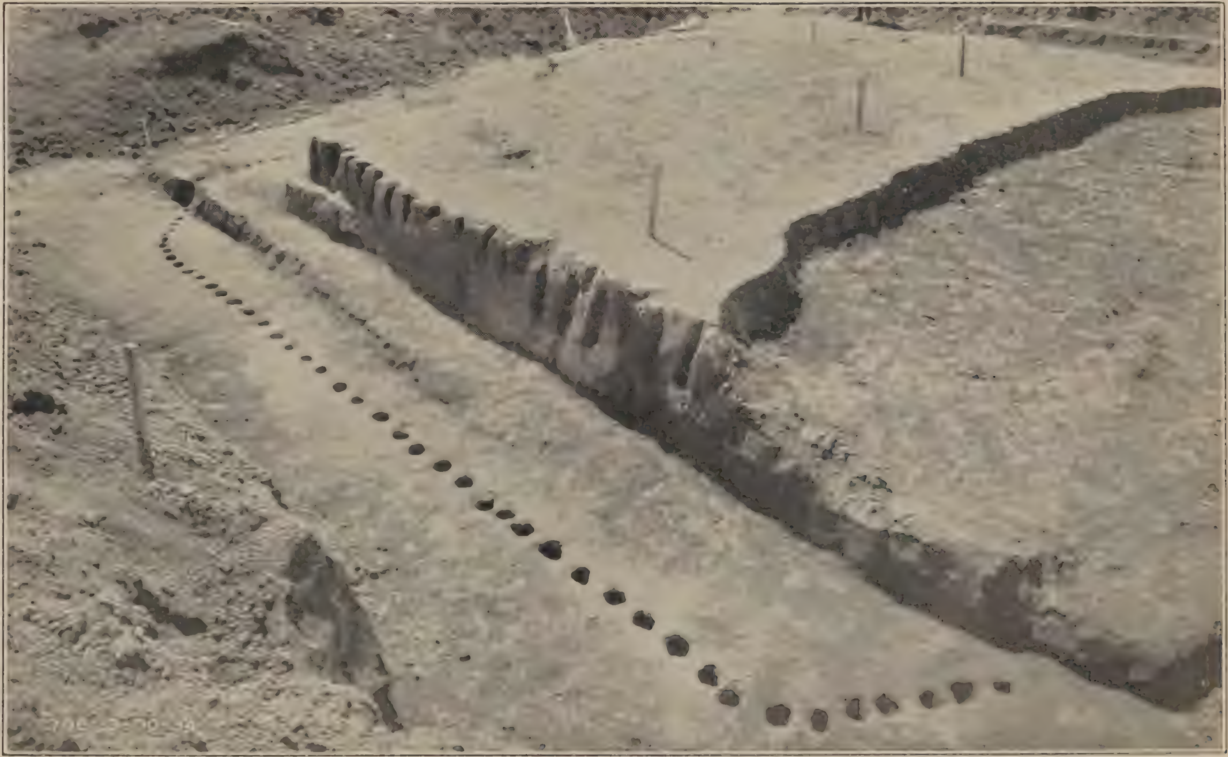
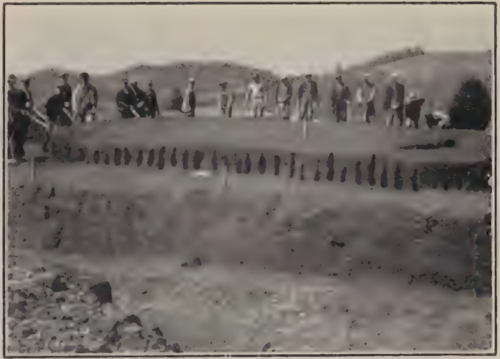

D
D
F 5
4 2
F 4
SITE 8
GROUND PLAN
PRIMARY FLOOR
Z
SCALE
5 4 3 2 1 0 5
FEET

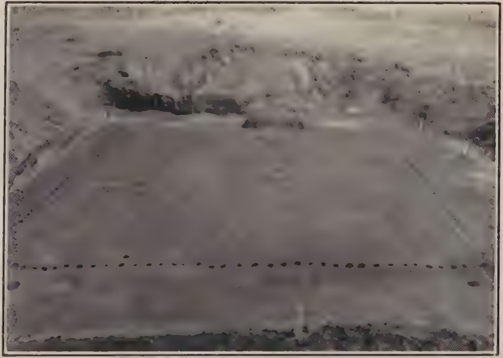
FIGURE 27.



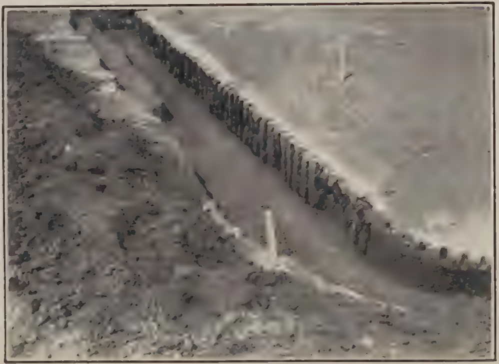
Molds of secondary structure inside and above the primary floor. Site No 8



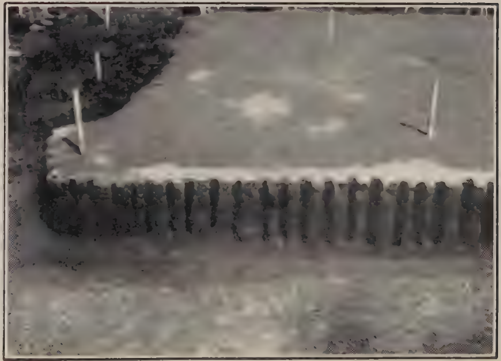
a. Secondary floor, 36 inches above primary floor. Site No. 8.



b. Primary floor from west. Site No. 8.



c. Longitudinal section of post molds at side and corner. Site No. 8.



d. Square corner construction. Site No. 8.

a. Ash pit in secondary floor. Site No. 8.

b. Inside and outside horizontal molds. Site No. 8.

c. Cane impressions on primary floor. Site No. 8.

On this floor of hard clay were several areas showing the print of split cane laid as a floor covering, as may be seen in plate 36, *c*. The finding of fine white sand on portions of this floor suggested that it was used as a floor covering.

POTTERY

The small amount of pottery from this site was in a poor state of preservation. The sherds show only plain and grass-paddled impressions. Two round handles were found. The total amount recovered was too small to warrant very definite conclusions. One badly disintegrated biconcave quartz discoidal was found.

CONCLUSIONS

It would appear that Site No. 8, because of multiple construction on the mound site, had once been the center of an important village. From the nature of the topography, if any village ever existed erosion has probably destroyed all evidence of it. However, it was a matter of regret that conditions did not permit excavation within the cultivated area about the mound. The manner of erecting buildings here seems quite similar to the other sites described as having the "small-log" type of construction. From this we would assume that here, too, the town house was "earth covered" and the mound raised only by the collapse of such earth-covered structure.

SITE No. 9.—HARRIS FARM MOUNDS

The Harris farm is on Cedar Creek Road about 9 miles east of La Follette. It lies in a rolling country of tall red-clay hills, on the east bank of Powell River, 13 miles upstream from its mouth. The soil is fertile and most of the area in Cedar Creek Valley has long been in cultivation. Plate 37, *a*, shows the actual site with working parties in the middle distance, and gives a view of the topography of the region. The Harris farm lies on a broad sloping ridge surrounded on three sides by high hills, which rise nearly 300 feet higher than its highest point. On the east the land slopes down rapidly to the level of Powell River. With the flooding of Powell River the Harris site will be covered with water to a depth of about 60 feet.

Archaeological interest here centered in two low mounds on the central ridge, about 600 feet east of the river. They were in a field which had long been in cultivation and which had been plowed in the fall in anticipation of spring planting. The long cultivation of this area had assisted erosion to such an extent that the mounds appeared only as gentle elevations on the ridge when viewed against the sky line, as shown in plate 37, *b*. The plot of the Harris site, showing location of mounds and distance from the river, is presented in figure 28.

MOUND NO. 1

Mound No. 1, which was 70 feet in diameter, was approximately circular. Long-continued erosion had made it impossible to estimate either the original size or height of this mound. It was built of mixed red and yellow clays and contained bits of charcoal, some shell, and scattered potsherds, all of which seemed to indicate that in part, at least, the earth forming this mound had been gathered from an old village site. Upon excavation, a definite humus line was found which marked the original earth surface. Scattered post molds in the hardpan were revealed in great numbers and, in the southern half of the mound, a definite structure was discovered. Figure 29 shows the floor plan of Mound No. 1 and the distribution of post molds. Besides the structures, there were two other interesting features.

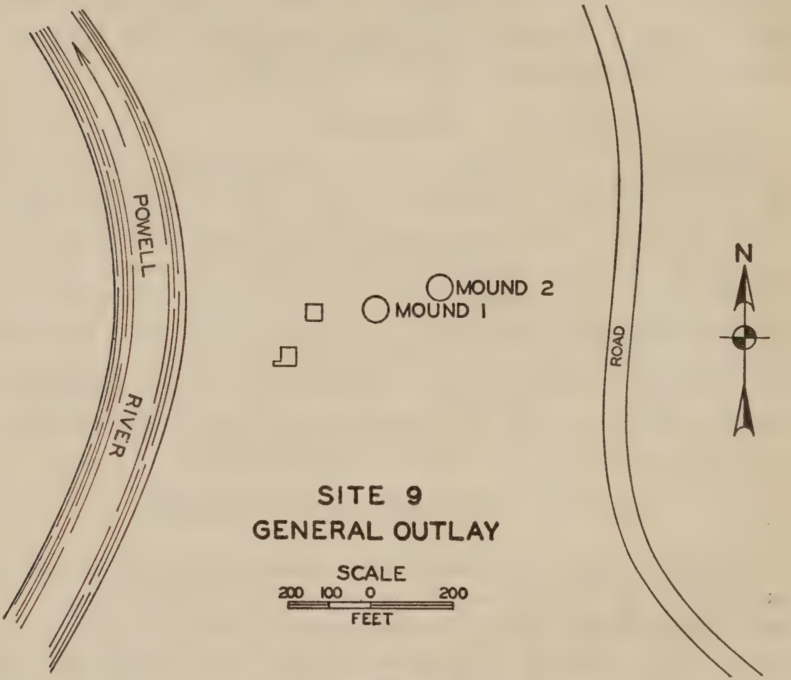


FIGURE 28.

Feature No. 1 was a circular depression on the hardpan clay, beyond the limit of the structure, in the southwest portion of the mound as shown in figure 29. This depression, about 9 feet in diameter and 5 inches deep, was filled with ashes, charcoal, and midden deposit containing much shell, some animal bones, and potsherds. Feature No. 2 was an elliptical depression on the floor outside and north of the structure, filled with midden material and ashes, containing considerable shell and some pottery fragments. This ash bed was 39 feet long and had a maximum width of 15 feet.

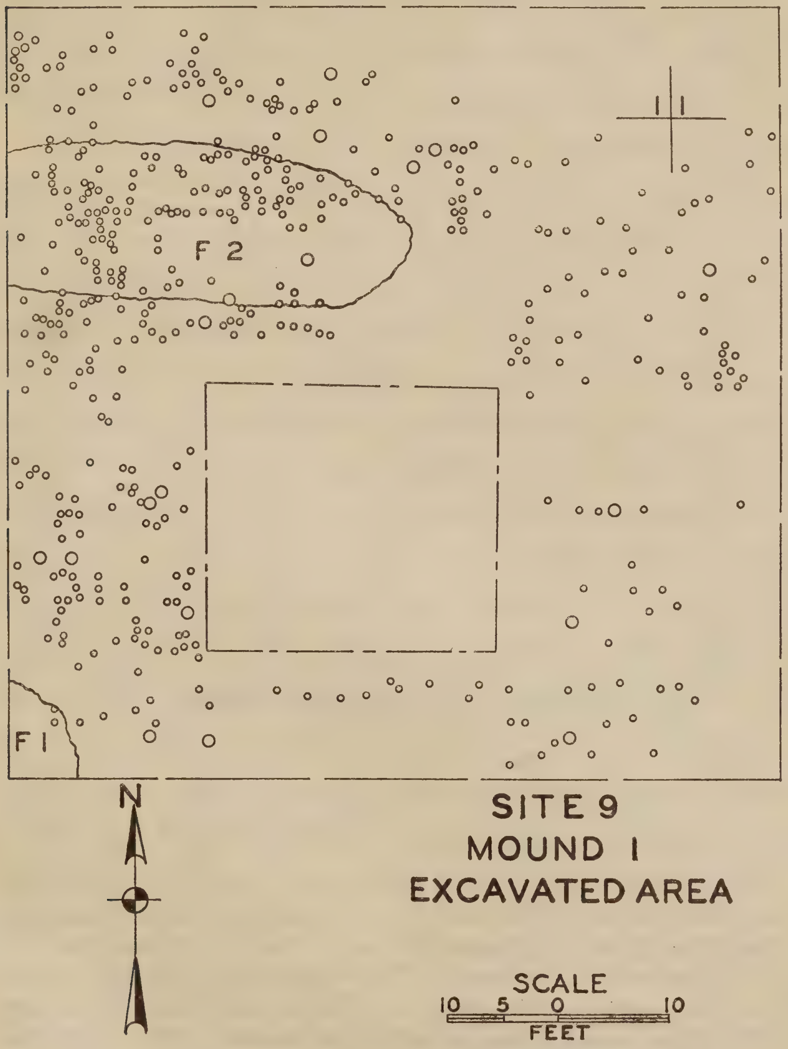


FIGURE 29.

The rectangular structure, the location of which is given in figure 29, is shown in plate 38. A detailed ground plan of the structure is shown in figure 30. This structure was 27 feet 8 inches long and 24 feet 6 inches wide. Trenches had been dug for the reception of the base of vertical posts. These vertical posts were held in place by a horizontal log at the bottom of the trench, on the outer side of the trench. No horizontal molds appeared inside the vertical molds. Corners were made by driving small poles in the earth, in the form of an arc. There was no evidence of any fire within the rectangular structure. A difference in the nature of the soil within and without the structure was easily observable. Another definite vertical cleavage plane [1] appeared immediately over the line of post molds.

Within the structure the soil was darker and mixed with more charcoal, dark red and yellow clays. Outside the line of post molds was a yellowish and brown clay which seemed to have been piled against the outside of the structure. On the west side of the structure the post molds slanted to the west in the softer earth above the floor in which the bases of the posts were embedded. This seemed to indicate that the wall of the structure leaned outward for a considerable time before its final destruction by decay. There was no evidence of any burned structure in the mound and no evidence that any other structure had been erected on the site. From the evidence here, and from other sites,[2] the author is convinced that many of these wooden structures in the basin were covered over with earth. Some structures had earth on their roofs to a depth of 3 or more feet. A close inspection of the remains of the structure in Mound No. 1 seems to demonstrate that it stood as long as it could withstand the forces of nature—wind, water, frost, and gravity. When the roof logs became so decayed that they could no longer sustain the weight of the earth on the roof they collapsed. This let the roof earth fall into the center of the mound, carrying with it the log framework on which it rested. By so doing, the falling roof slightly pressed outward the tops of the wall posts which still remained, giving to them in some sections of this post-mold pattern the outward slant which was observed. The falling of such a roof would account for the vertical cleavage line observed, if it is understood that the soil on the roof was of a different texture from that which was piled up against the wall. This is an observed fact, often repeated in this basin. The earth on the roof is the same color and content as the adjacent village. Any kind of soil, even with a large humus content, would lie on the roof. But the builders seemed to understand that it took a clean, tough clay, free from humus, to stand up well when piled against the walls outside such a structure. It is an observed fact that on this site, as on others

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[1] See Site No. 2.

[2] See Mound No. 2.

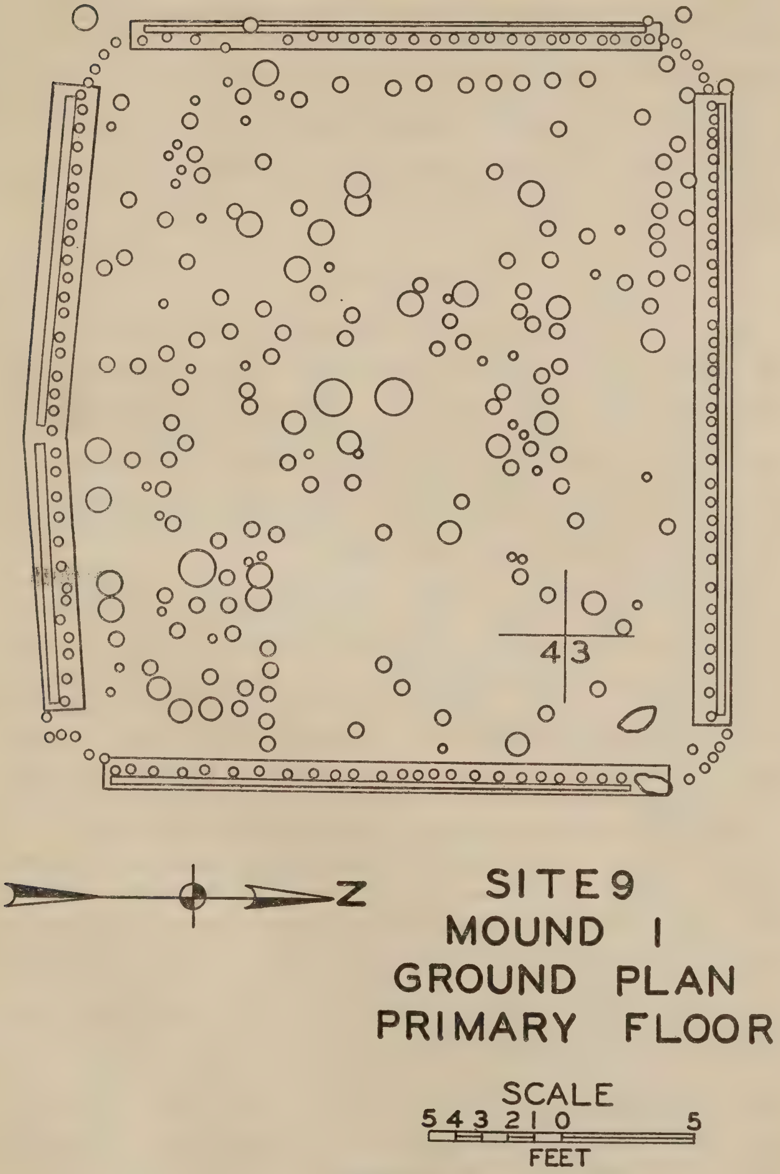

43
Z
SITE 9
MOUND 1
GROUND PLAN
PRIMARY FLOOR
SCALE
5 4 3 2 1 0 5
FEET

Figure 30.

in the basin, the earth outside the vertical cleavage plane is clean, yellow clay, free from humus. Further, the condition in which this structure pattern under the mound was found is so obviously the result of natural forces, unhindered and unmodified by the acts of man, as definitely to suggest that this structure was still standing when abandoned by its builders, and that it so remained until the agencies of time brought about its collapse. After its collapse, the leveling process of erosion made it possible for the early settlers to begin the cultivation of this site, which has continued for nearly a hundred years.

Mound No. 2

Mound No. 2 was located about 200 feet west of Mound No. 1. It was constructed of mixed red and yellow clay and contained scattered periwinkle shells throughout. The mound was about 65 feet in diameter, its original size being difficult to estimate because of erosion. This mound was on the highest part of the ridge and on three sides sloped rapidly from the crest. This fact, together with the long cultivation of the soil, had produced considerable spreading of the earth from the top of the mound.

Excavation revealed a humus line which was easily observed. Below this, and extending out into the cultivated field, were scattered post molds, as shown in the floor plan of excavation in figure 31. As excavation proceeded a floor was uncovered which was at first thought to be the primary floor of the mound, but which later proved to be a secondary level. On this secondary floor a rectangular structure 28 by 40 feet was uncovered, as shown by the post-mold pattern. Outside the structure, but at a secondary level, were a number of interesting features, located as shown in figure 31.

Feature No. 1 was a group of fire-cracked stones mingled with charcoal which covered an area 27 inches by 32 inches. Feature No. 1 was located just outside the southeast corner of the secondary structure and also appears in the left foreground of plate 39, which shows the secondary floor completely uncovered. Feature No. 3 was a pile of small burned limestones mixed with charcoal and ashes. Feature No. 4 was a pile of charred shelled corn. The pile was 1 foot wide, 1½ feet long, and 3 inches thick. The corn was covered over with small pieces of split cane and it lay upon a flooring of split cane. There was no weaving of the cane apparent. The ground plan of the secondary structure is shown in figure 32. The usual trenches with outside horizontal logs were used to hold the vertical posts in place. This structure was very nearly oriented on the cardinal direction, and was very uniformly constructed, except at the

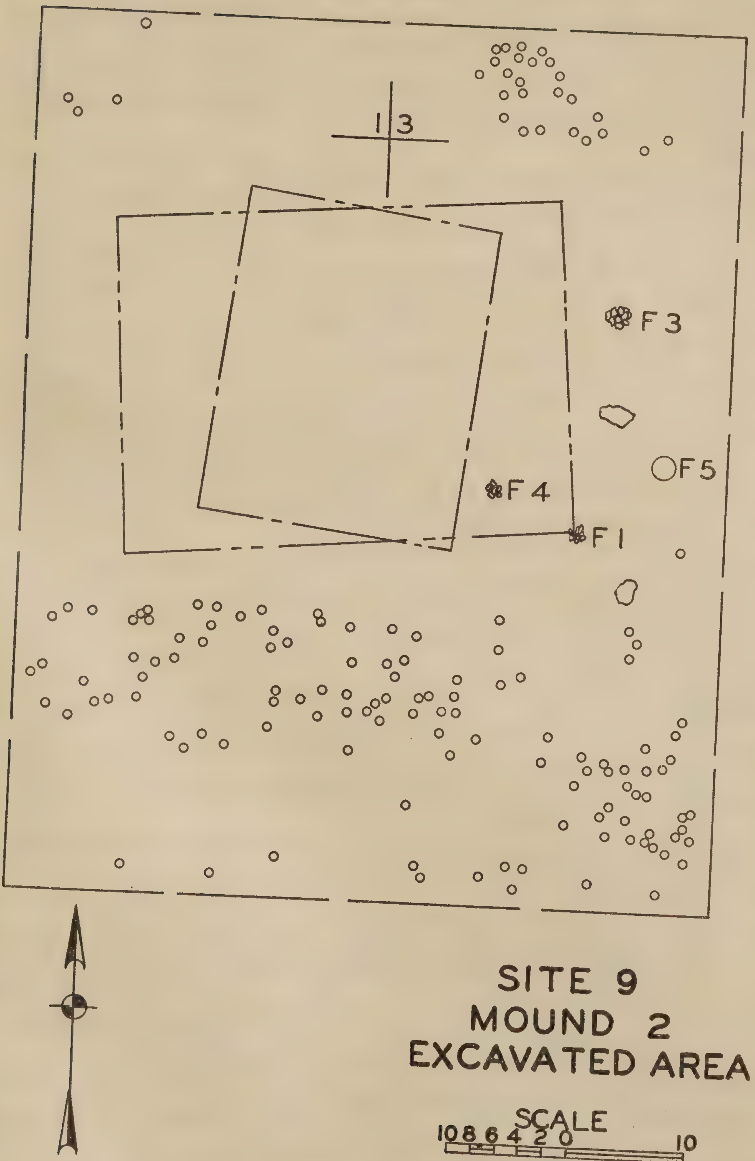

13
F 3
F 5
F 4
F 1
SITE 9
MOUND 2
EXCAVATED AREA
SCALE
10 8 6 4 2 0
10
FEET

FIGURE 31.

corners. Each corner was finished in a different manner, as shown in figure 32. The horizontal molds of this structure, as is generally the case where they are found, are of smaller diameter than the vertical posts, and they are often crooked, as if the logs which formed them had been pulled out of shape by being tightly bound to the vertical posts. There were no horizontal molds inside the post-mold pattern.

The outstanding feature of this secondary floor were a clay seat and an elaborate fireplace or altar. The clay seat, Feature No. 7, is shown in plate 130, *a*. The dimensions of this two-step seat are given in figure 33. The seat was made of hard-packed clay, seemingly baked by fire. The surface was smooth and the whole well preserved. It was located against the east wall nonsymmetrically, as shown in figure 32, and thus faced the west. The post molds of the wall came up directly against the back of the top step. The dimensions of the steps, particularly the 6-inch elevation of the top step over the lower, which was 9 inches thick, did not make a convenient seat when used as one might use a modern chair. However, when one sat cross-legged on the top step, the lower step was in just the right position to be quite comfortable. Both the steps had slightly concave surfaces. It would seem that this seat was used by the "presiding officer" at functions conducted within this building. It is easy to imagine that the comfort of such a seat would be increased by covering it with a skin of deer or bear when used on occasions of ceremony. In addition, one can imagine that the wall immediately behind served not only as a "back" for the seat, but on occasions of moment was decorated with the emblems of significance and implements of service, as reported by early travelers in other parts of the country.

Feature No. 6 was a clay fireplace or altar on the secondary floor. This altar was made of hard-baked clay and was 6 feet square. The top surface was raised 3 inches above the secondary floor. The corners were slightly rounded, and near each was a circular concave basin 19 inches in diameter and 2 inches deep, as shown in plate 133, *a*. Portions of this altar were well preserved, but some of the corners were cracked and broken away, in a manner suggesting intentional partial destruction by their last associates. A portion of these fragments was removed by workmen before its nature was discovered. The basins had been very carefully wrought. The surfaces were smooth and of regular curvature, and all four were remarkably uniform in size and symmetrically placed. Further, while the altar was near the center of the structure it was not symmetrically placed with reference to the wall, but was so nearly oriented along the cardinal directions as to show no deviation therefrom by field methods

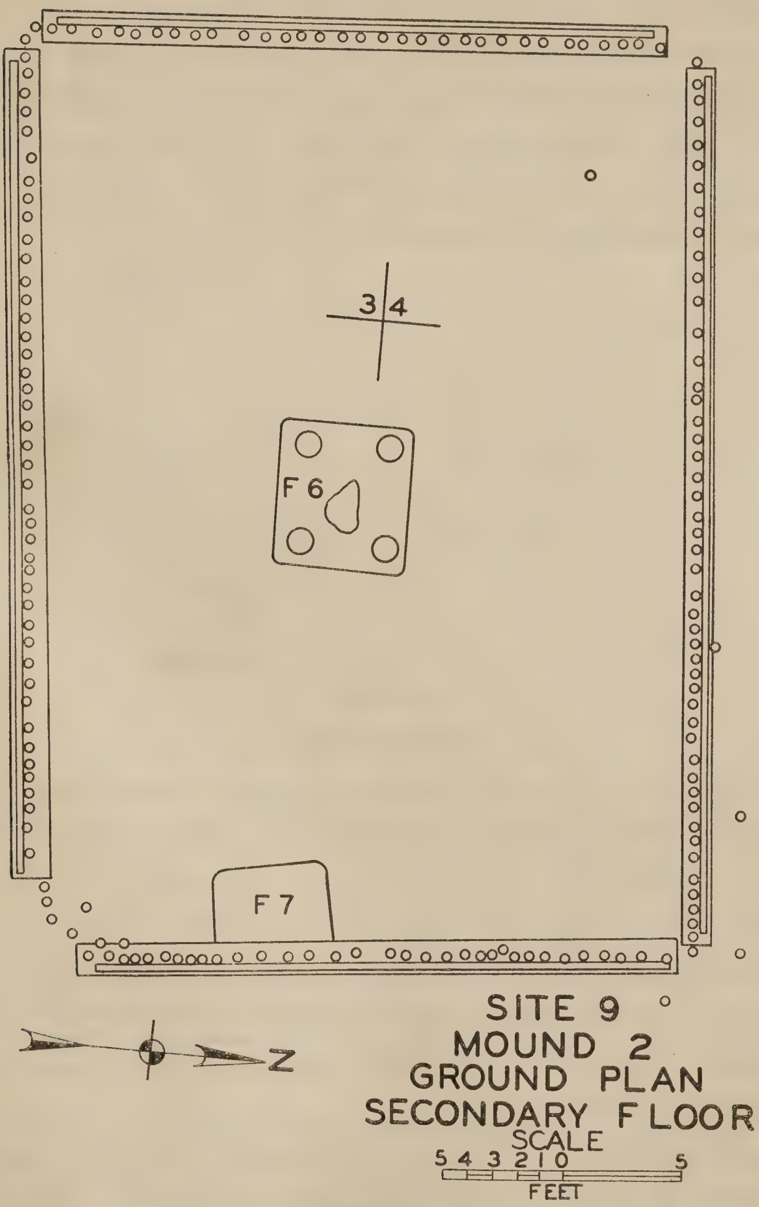

3
4
F 6
F 7
Z
SITE 9
MOUND 2
GROUND PLAN
SECONDARY FLOOR
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 32.

of observation. In the center of this altar was a firepit, elliptical in shape, 28 inches by 14 inches and 12 inches deep. This pit was filled with fine wood ashes and charcoal. At this stage of the excavation a long-continued rainy season, with intermittent freezing of the soil at night, interfered with the careful and critical study of the actual floor surface of this secondary structure, which study would have been made had conditions permitted. It was found impossible, after work was resumed, even by the most careful and painstaking effort, to sweep off the actual floor. Frost action and excessive rain had destroyed the records sought.

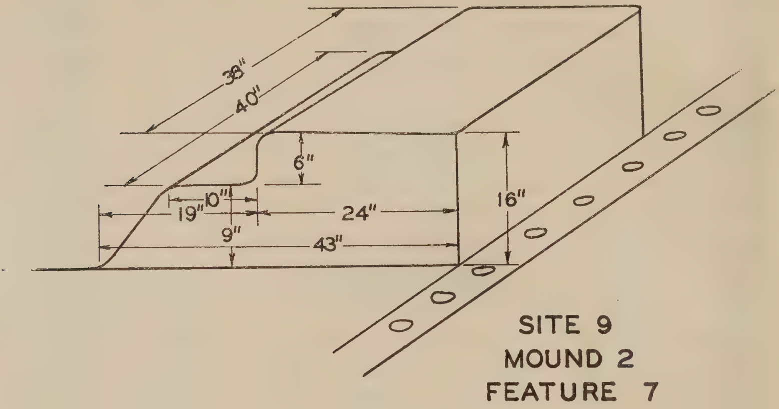


FIGURE 33.

PRIMARY FLOOR

After the secondary floor had been cleared as carefully as possible and the features photographed, it was decided that the central content of the structure should be removed to allow a vertical slicing of the post molds from the inside, so that the method of construction of the building might be investigated. It was proposed to leave the seat and the altar in place and attempt to show them in relation to the longitudinal section of the post molds below the floor level. At once a lower and primary level of occupation was discovered. This was first made apparent by the presence of a burned and collapsed building under the secondary floor. This structure was uncovered, as shown in plate 40.

Since the primary structure was smaller and lay almost entirely within the secondary structure, the primary floor level could be found outside the primary structure and within the secondary. When the post molds of the larger secondary structure were cut down longitudinally to the primary floor it became apparent that the burned structure had collapsed after burning, but in falling had not reached the primary floor. In sections of the collapsed wall every post was shown by its charred remains, the basal end terminating exactly in a post mold at the boundary. But these posts in falling had been held up off the primary floor by as much as a foot or more of red clay. Although the clay was *under* the fallen and burned wall and rested on an unburned floor, yet it was hardened and discolored as a result of the considerable heat action. The clay immediately *over* portions of this structure showed much less effect of burning. Further, portions of this fallen structure were not all at the same level above the primary floor. The conclusion seemed inevitable that this structure before burning had been covered with earth. While the structure was burning, the clay on top of the building, due to its position, was subject to considerable heat. As the burning progressed, holes in the wooden structure allowed some portion of this burned clay, on the roof of the building, to fall through to the primary floor. Finally, the whole building collapsed, with the result that where the roof clay had fallen in on the primary floor it prevented the charred walls from reaching that level when they fell later. Careful observation here seemed clearly to demonstrate that this was what happened on this site, and definitely suggests that the roof of the structure was covered with earth before the burning. It would seem utterly impossible for earth to have been carried and placed on this structure while it was burning, which would have been necessary if the condition here presented was to have been attained. In plate 41 are shown portions of this structure, a foot or more above the structure floor, held up by the burned earth *underneath* the charred remains.

As soon as excavation inside the secondary structure was begun, another clay seat of two steps, shown in plate 131, *a*, was discovered on the primary floor. This seat against the south wall of the primary structure was symmetrically located and is shown in figure 34, which is a ground plan of the primary floor. The seat was well preserved, very hard and dry, and had been fire-hardened. However, after having been exposed for several days and subjected to the action of the weather, with intervals of rain and hot sun, it began to crack and finally to crumble badly. It was, however, clear that the seat was well made originally. It had been made with smooth surfaces and comparatively square corners. The dimensions of this seat are shown in figure 35.

Attention should be called to the large post mold nearly a foot in diameter located at the northwest corner immediately adjacent to this seat. This mold was too near the primary wall to serve any ordinary useful purpose in wall construction, and it definitely suggests some association with the seat. This mold is shown in a close-up of this seat in plate 131, *a*, shown with seats from other sites.

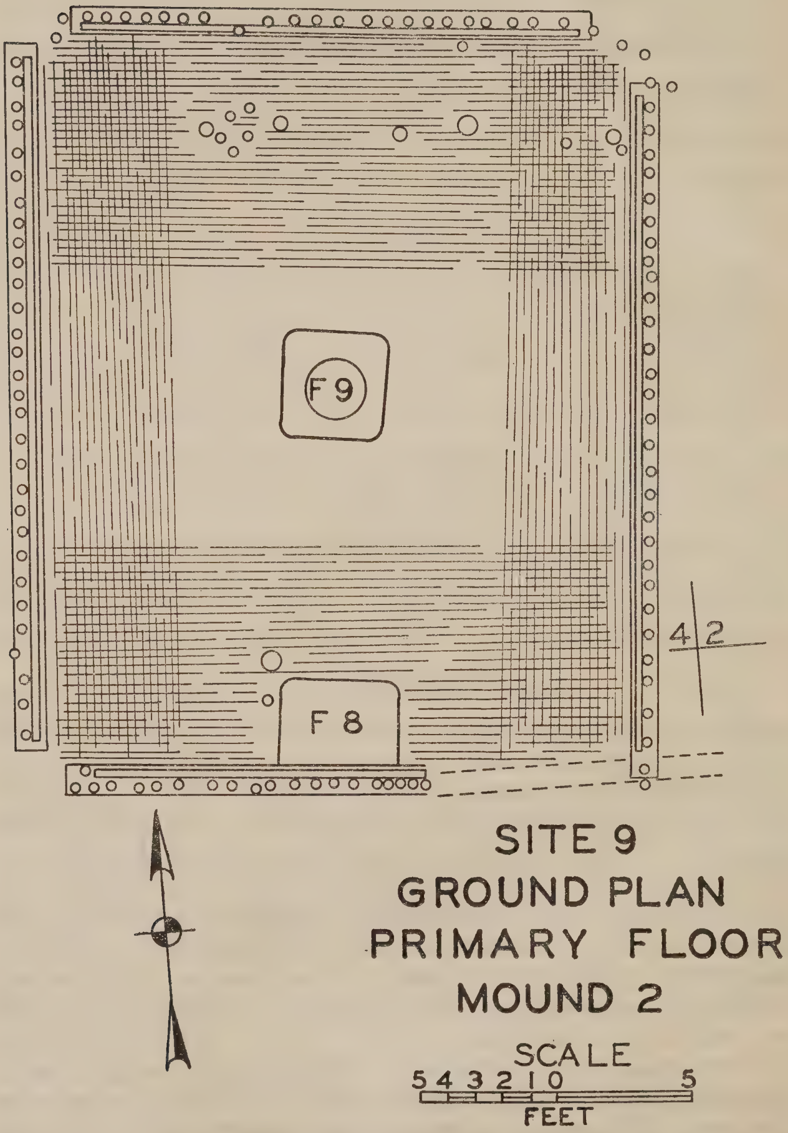

F 9
F 8
4 2
SITE 9
GROUND PLAN
PRIMARY FLOOR
MOUND 2
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 34.

Upon the removal of the "altar" upon this secondary floor and the clearing of the fallen structure, another fire basin or altar was discovered in the primary floor. It was a square of hard-burned clay 44 inches on the side raised about 2 inches above the floor level. The corners were rounded and in the center was a single circular concave basin 23 inches in diameter and nearly 4 inches deep at the center. A close-up of this basin or altar is shown in plate 132, *b*, with other similar basins shown for comparisons. The altar was placed nearly symmetrically in the center of the structure, as shown in figure 34. When the altar was removed there was found under it two post molds 9 inches in diameter and about 18 inches deep. It was thus revealed that the altar was built up of clay plastered over a depression in the primary floor.

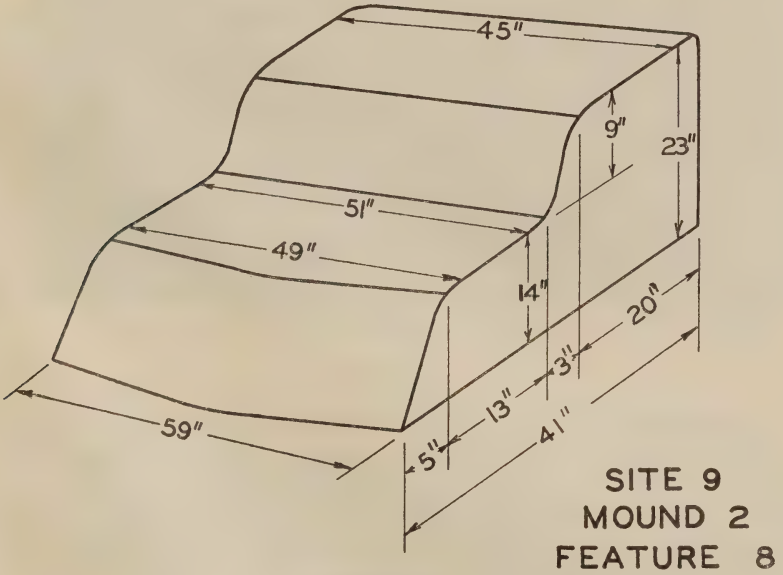


FIGURE 35.

When the primary floor was carefully swept off with whisk-brooms, a definite impress of split-cane matting was revealed. This cane formed a broad border along each wall, as shown in plate 42. The cane had been pressed into the clay floor, leaving an imprint of each stalk. Plate 43 shows a section of the interior edge of this cane-covered area and also shows how the whole surface of the floor was once dry and hard and cracked. It showed no evidence of fire. At the corners the imprints clearly showed that this border over-lapped from side and end to give a cross-checked pattern. Plate 44 shows the entire plan of the post-mold structure of the primary floor, mostly within this secondary structure pattern. In one portion of this post-mold pattern, where the secondary structure trench crossed obliquely, the primary trench and molds were superposed. The line of both trenches was observable, some of the primary molds having been filled by the secondary construction.

Outside the structure, but on the primary floor of the mound, Feature No. 5 (fig. 31) was found. It proved to be an ash pit 36 inches in diameter and 18 inches deep, filled will shells, ashes, and potsherds. On the primary floor, but under the seat of the secondary structure, was found a pit 3 feet by 4 feet, having a depth of 3 feet. This pit had been filled with refuse before the seat was constructed and was therefore in association with the primary floor.

Outside the boundaries of the structure in both Mounds Nos. 1 and 2 there were scattered post molds and other evidences of occupation. It is believed that an investigation of the surrounding area would have demonstrated the existence of a village site. However, the land had been plowed and made ready for planting, and permission could not be obtained for general digging in the cultivated fields. Further, the work on the two mounds continued up to the planting time, and but for the forbearance of the owner, must, for this reason, have been prematurely cut short. It is a matter of regret that no opportunity was offered to search for a village site here and for any possible burial grounds that may have existed.

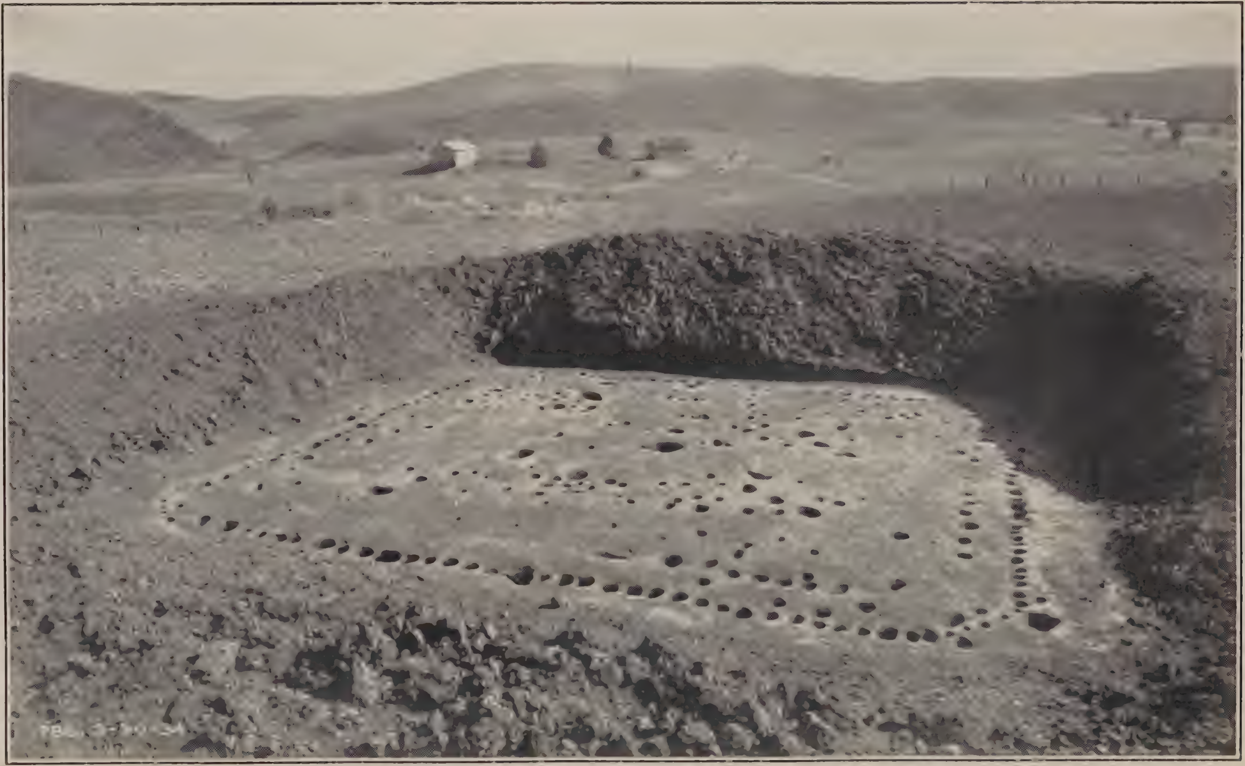
Pottery

In general, the bulk of the sherds were plain ware of medium thickness and very soft. Their general appearance suggests that they lay on the ancient village site sufficiently long to suffer considerable decay before being incorporated in the mounds. The two mounds seemed to be identical in this respect. The tempering material seemingly was shell, which, because of its complete removal in most sherds, left them porous and quite light in weight. They were so soft that many disintegrated in the attempt to wash them. Sherds of large vessels of utility forms were most frequently found. The plain sherds generally indicated large pots decorated only with round handles, some of which rise above the smooth rims to form single or double knobs, as shown in plate 45, *a*. No other type of handle was found on this site, which yielded 26 of the type shown in plate 45, *a*.

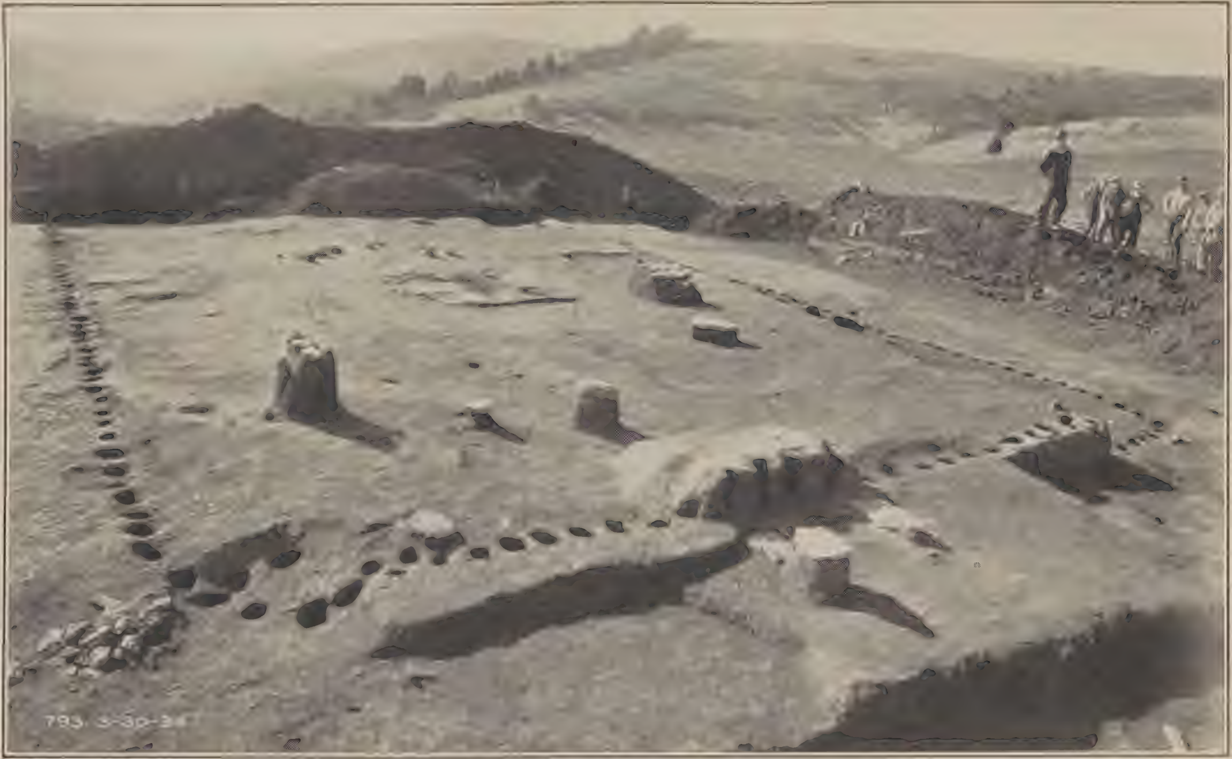
With the heavy sherds were found some textile-marked sherds. The number was small and did not exceed 5 percent of the total. These sherds, shown in plate 46, *a*, indicated quite a range of weaves. The textiles used were well made and were unusually deeply impressed in the clay, with the result that quite perfect impressions

a. Harris farm. Site No. 9.

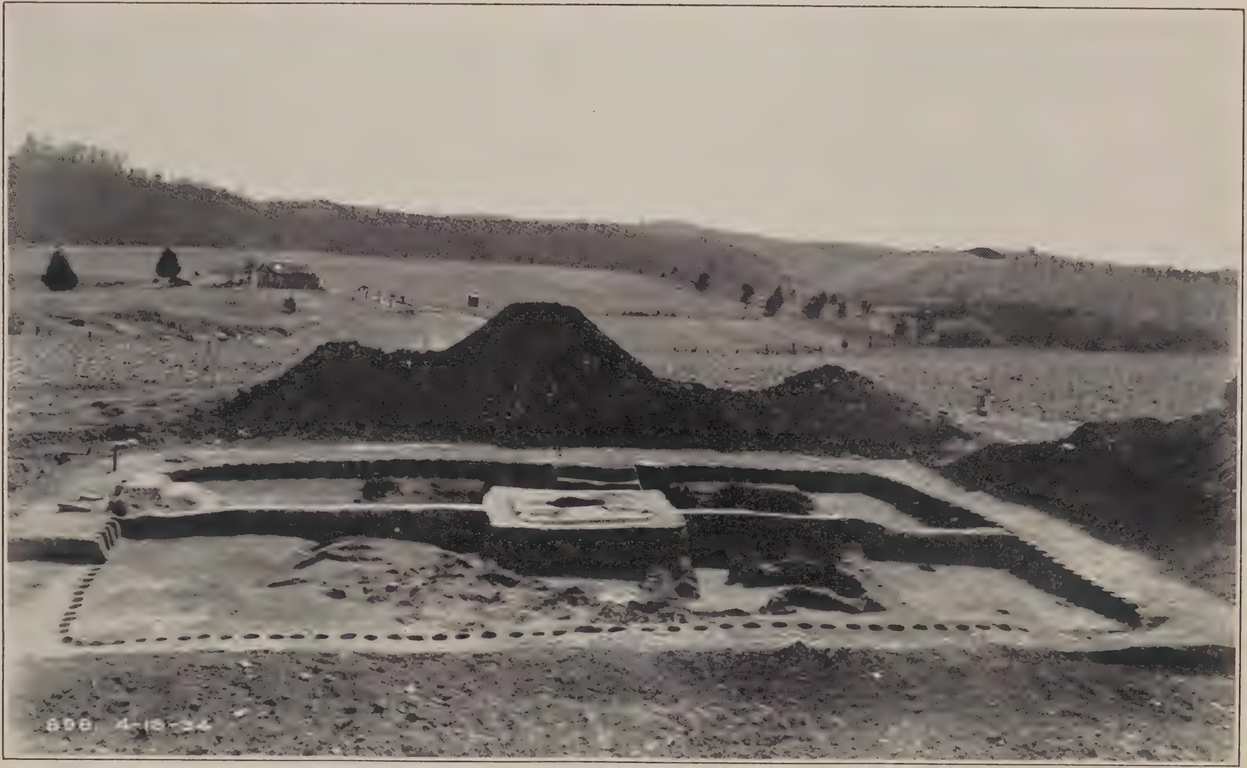
b. Mounds No. 1 and No. 2 on sky line. Site No. 9.



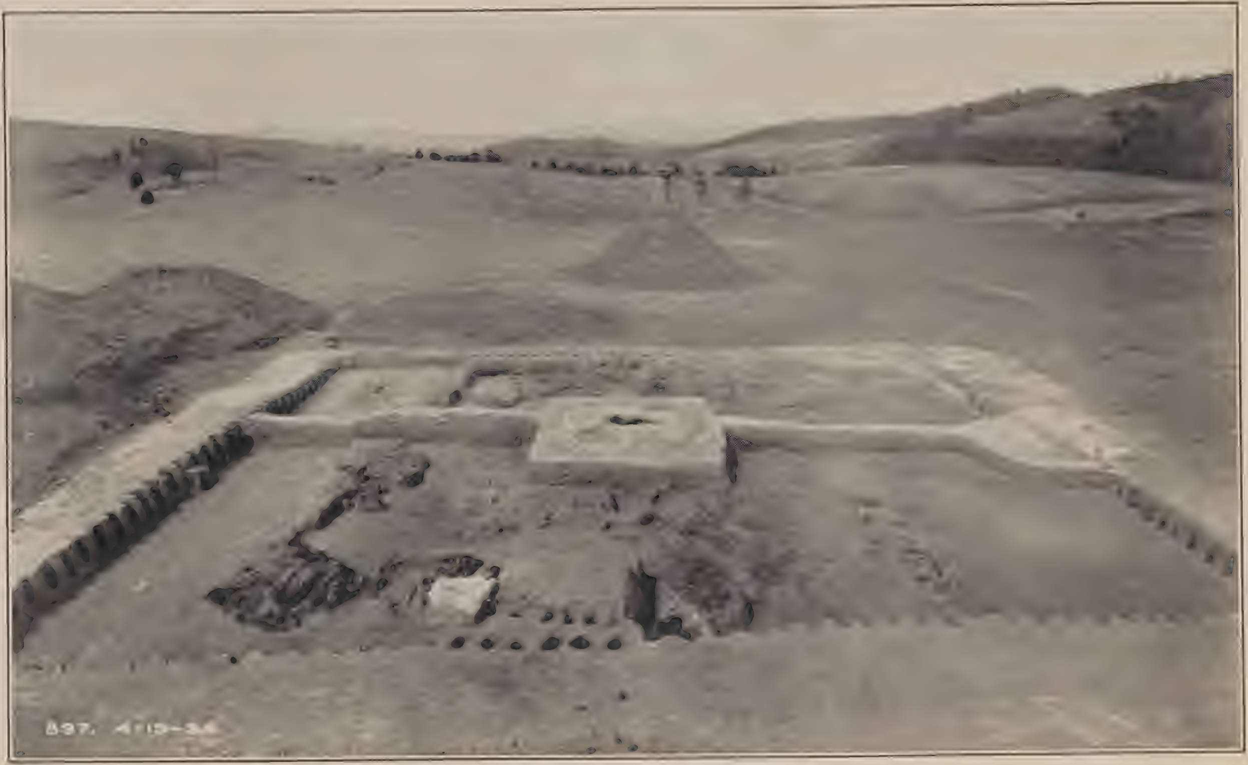
Post-mold pattern floor of Mound No. 1, Site No. 9.



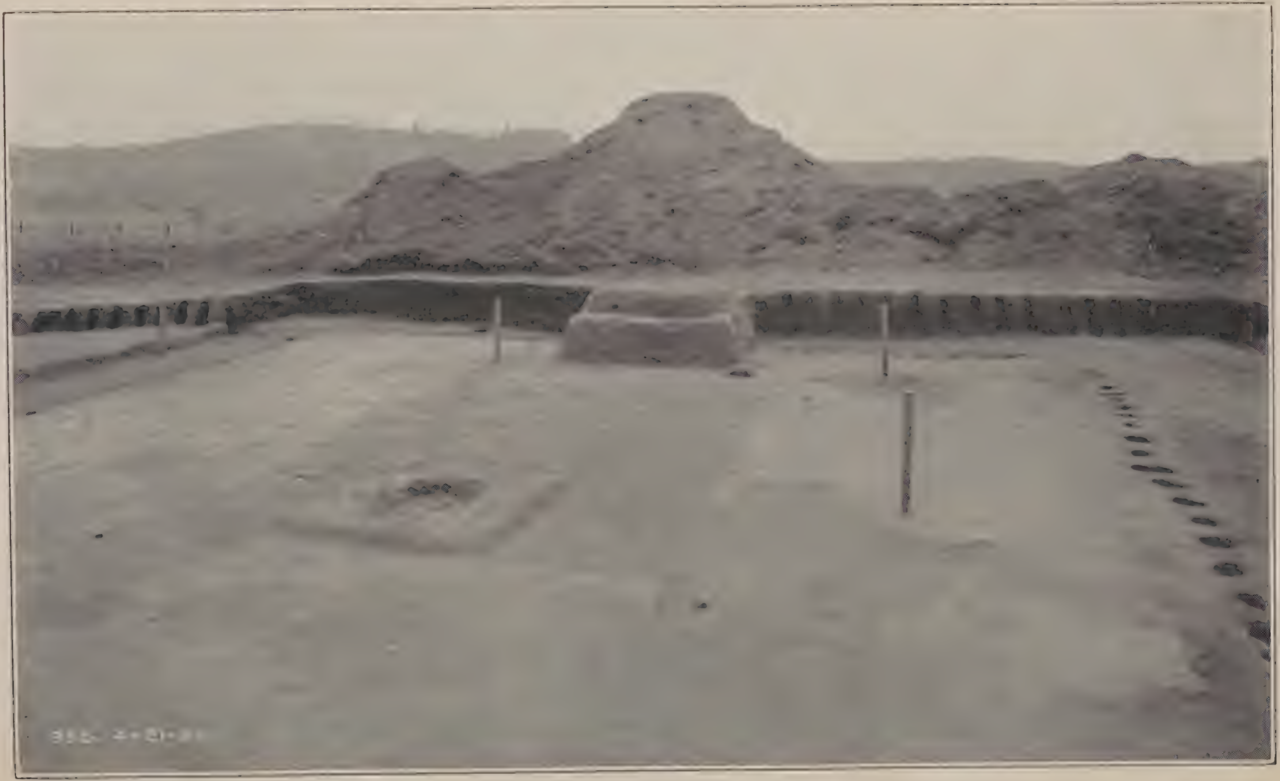
Secondary floor. Mound No. 2, Site No. 9.



Burned primary structure. Mound No. 2, Site No. 9.

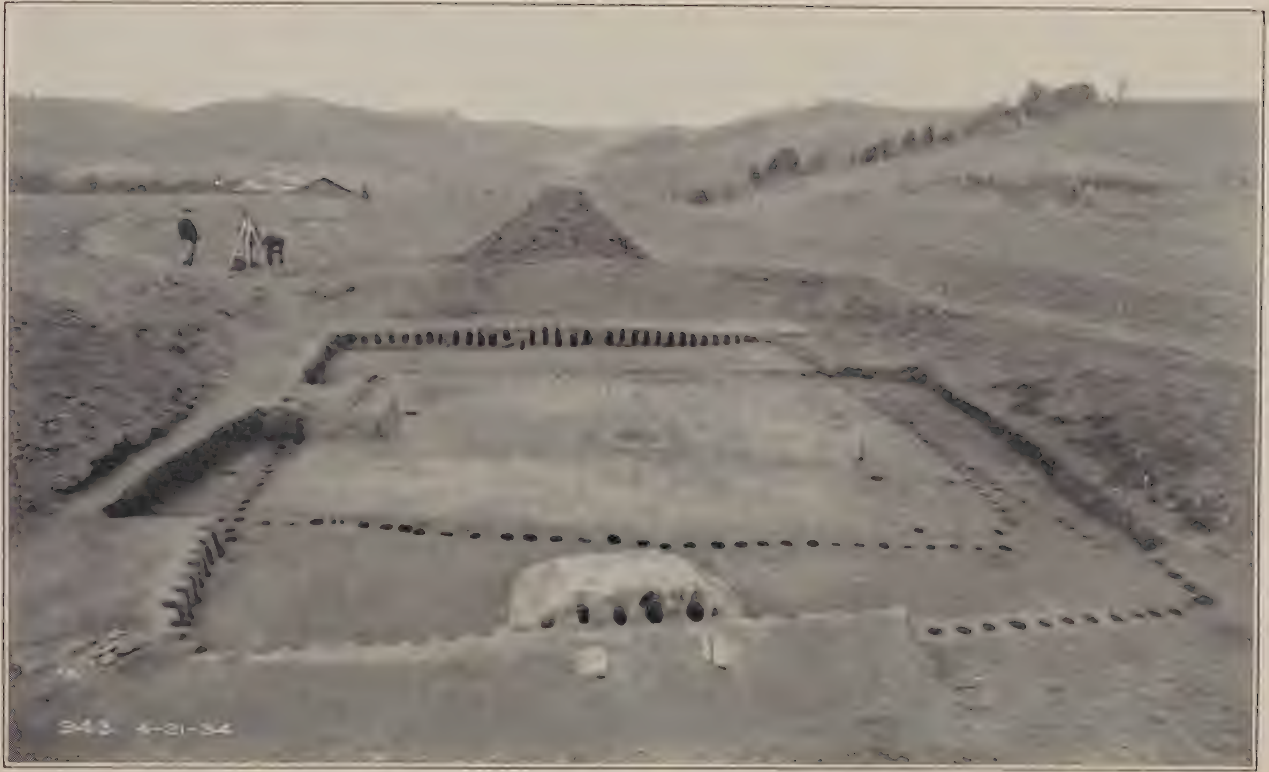


Burned structure rests on burned earth above floor. Mound No. 2, Site No. 9.

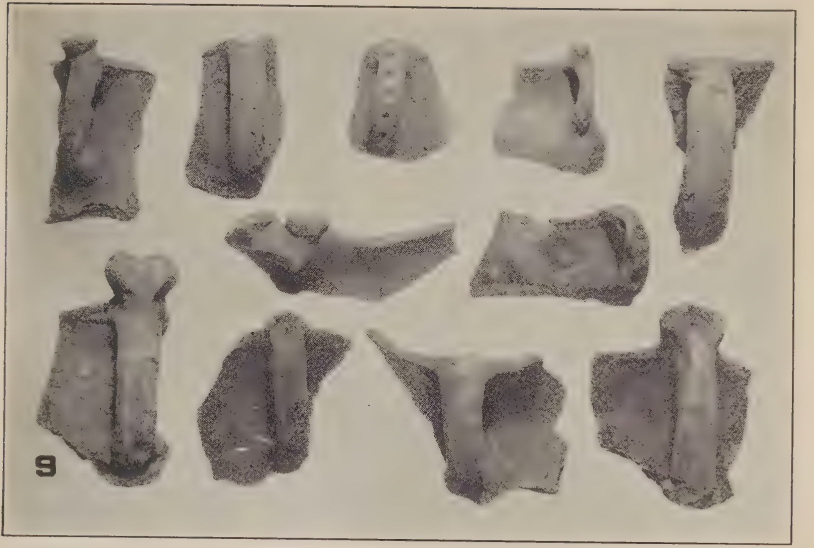


Primary floor which was once covered with split cane. Mound No. 2, Site No. 9.

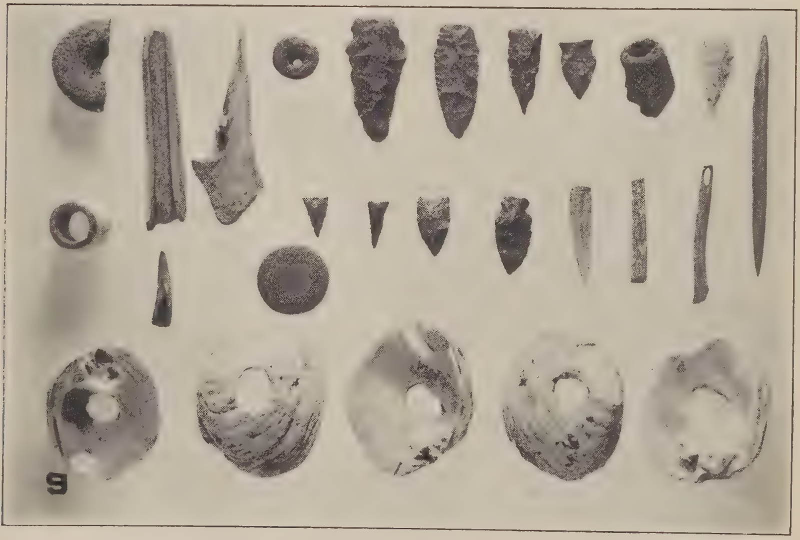
Inside edge of cane impressions, primary floor. Mound No. 2, Site No. 9.



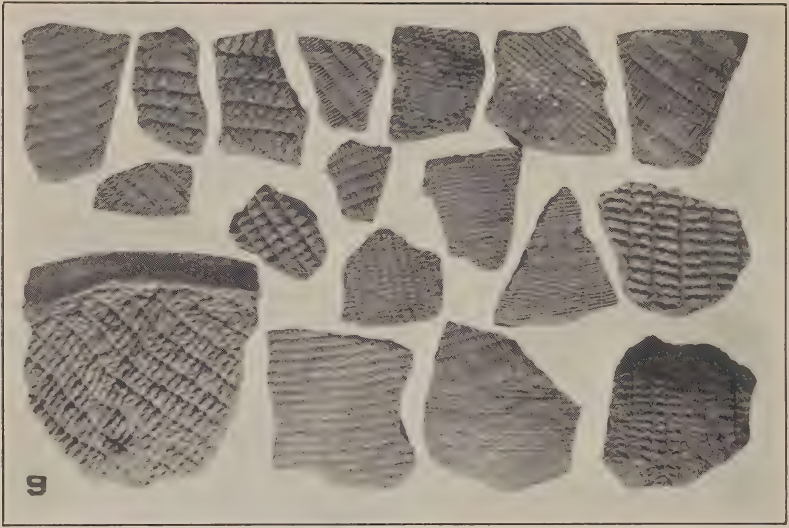
Primary and secondary post-mold patterns superposed. Mound No. 2, site No. 3.



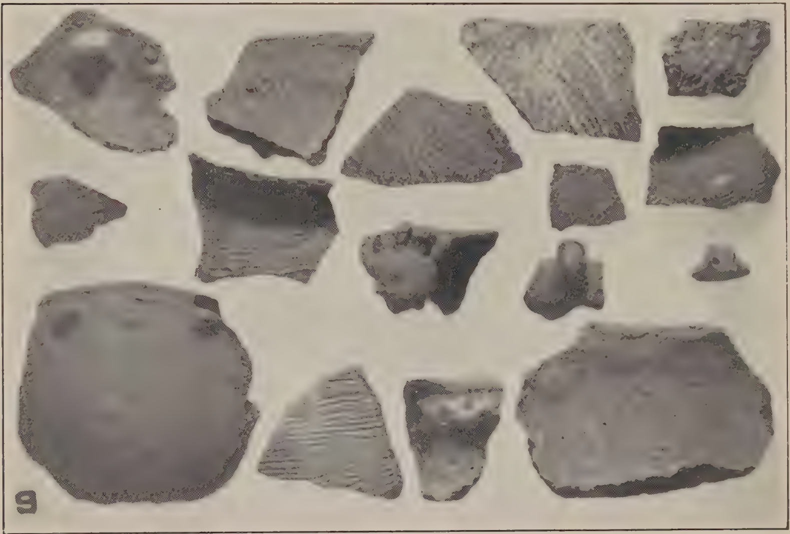
a. Loop handle variations. Site No. 9.



b. Artifacts from the general digging. Site No. 9.



a. Types of textile-marked salt-pan sherds from general digging. Site No. 9.



b. Miscellaneous sherds, including a fragment of a pointed rim, a large bowl, and two effigy heads.

have remained. There seems to have been no attempt by the potter here to rub out the impression after removal of the cloth, as is so often the case.

In plate 46, *b*, is shown one plain sherd from which the tempering material has leached out, leaving numerous pits. This is the usual type here. The other sherds in this figure show types very rare on this site and, while present, they represent a very insignificant portion of the whole. They do, however, suggest contact with sites where these types were common. A few sherds (pl. 46, *b*) showed grass-paddle and cord-paddle marks. This ware, small in quantity, seemed harder and better preserved than the plain sherds on this site. A few steatite sherds were found.

ARTIFACTS

Since no excavations were conducted in the village site which may have surrounded these two mounds, the artifacts found were limited to chance inclusions in the mounds as they were constructed. Plate 45, *b*, shows a representative group. A larger number of perforated mussel shells were found throughout the mounds. Their broken distal ends show wear as if they had been used as scrapers or hoes. The large number of shell hoes (58 perfect specimens) suggests the method by which the hard red clay composing these mounds was dug. The mounds appeared to have been built from clean red and yellow clay, and to have contained a minimum of village midden. This fact accounts for the scarcity of artifacts and pottery from this site.

CONCLUSIONS

Site No. 9 seems clearly related to Sites Nos. 2, 5, and 6. It is perhaps the best example of the successive superposition of earth-covered town houses, of the "small-log type of construction. It seems highly probable that the surrounding region would have shown evidence of a village site if excavation had been permitted.

SITE No. 10.—AUSMUS FARM MOUNDS

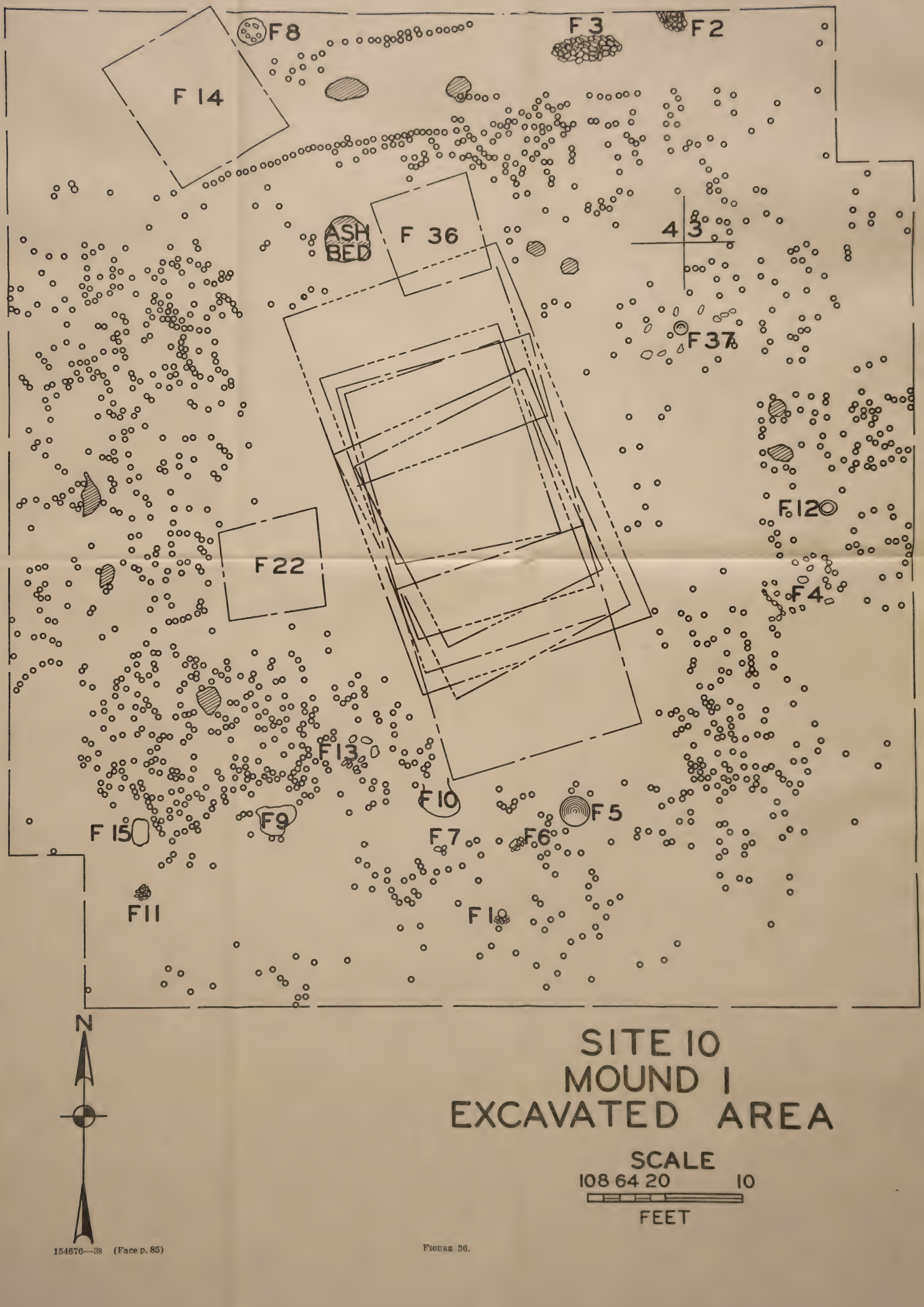
This site is on the farm of John Ausmus, near Speedwell, Claiborne County, Tenn. The farm is on the south side of Tennessee Highway No. 63, from La Follette to Middlesboro, and some 16 miles northeast of La Follette. The site is on the south side of Davis Creek in a large northward bend of this creek. Within this bend there is a plateau sloping gently to the creek in all directions. On the highest portion of this plateau are the remains of two mounds. These low earth mounds seem to be all that remains of what was perhaps once a very considerable village. The whole plateau has long been in cultivation, and in the spring of 1934 was a hay meadow. Excavation was therefore not permitted in the whole area, but was confined to the limit of the two mounds. Permission to excavate was granted upon the condition that earth removed would be spread between the two mounds, some 250 feet apart, leaving the crest of the plateau as level as possible. This was done, so that while the mounds were completely removed, no attempt was made to determine the possible extent of the village site in the surrounding territory.

To the north, about a mile airline, lies Cumberland Mountain, the nearest crest rising to an elevation of some 2,950 feet above sea level. The water level of Davis Creek, adjacent to this site, is approximately on the 1,000-foot contour.

To the southward the terrain rises irregularly, forming a low-lying ridge of foothills. The field in the immediate vicinity of the mounds has been in cultivation for several generations. Definite attempts by the owner to "plow down" these mounds at each cultivation of this area has assisted natural erosion in spreading the tops of the mounds over areas much larger than they originally occupied. This long-continued effort to reduce the height of these mounds, in order to facilitate cultivation, made it very difficult to ascertain exactly the original dimensions of the mounds. Each mound seemed to have had its height reduced by at least as much as 3 feet at its highest point.

Mound No. 1

This mound is the larger of the two on the site. It is oval in shape, about 130 feet long, north and south, and 110 feet broad, east and west. The lowest floor had been placed on original clay hardpan, by the removal of original topsoil. The original humus line extended only under that portion of the area which had been built up by erosion. The area was staked in 10-foot squares—140 feet north and south by 120 feet east and west with 0.0 reference point at the northeast corner of the excavated area. The mound was completely removed. Because of an ample supply of available labor, excavation was conducted on two sides of the mound simultaneously. Each 10-foot square was cut down to the undisturbed hardpan, so that each 10-foot section revealed a clean floor, and a vertical face which could be studied for profile. This method was continued until lines of large post molds revealed the presence of structure in the mound above the base level. This trenching was carried on for all four faces, down to hardpan, until post molds were found in the upper portion of the mound. Trenching was then abandoned and


F8
F3
F2
F 14
ASH BED
F 36
4 3
F37
F22
F120
F4
F13
F10
F5
F15
F9
F7
F6
F1
F11
N
SITE 10
MOUND 1
EXCAVATED AREA
SCALE
10 8 6 4 2 0 10
FEET

154676—38 (Face p. 85)

FIGURE 36.

the remaining portion of the mound was "topped", by removal of earth, to reveal a horizontal post-mold pattern as shown in plate 47.

Reference stakes were kept in position and carried down as earth was removed in horizontal sections by the use of hand barrows. This method has the distinct advantage of uncovering a whole post-mold pattern and revealing the size and orientation of the structure, as well as permitting the careful cleaning and study of the floor of the structure and its photography. However, it has the definite disadvantage of the loss of vertical profiles, which are so necessary in determining any intrusion through any horizontal stratification. This method of topping places an additional burden of responsibility on the excavator to catch *at once* all evidence of intrusion and to actually visualize in three dimensions what he sees, since there will be no profiles upon which later he may check his findings.

The hardpan under the mound, outside of the central structure area, revealed numerous scattered post molds, ash beds, fireplaces, and other features, but in general they were so scattered that no significant arrangement could be observed. Figure 36 is a base chart of this mound floor. It shows the post molds, carefully plotted, as well as the special features indicated by number, as briefly described later. Within the central portion of this mound post-mold patterns were uncovered which seemed to show that eight different rectangular structures had been built in succession on this restricted area. The various east-and-west walls differed but little in placement and orientation, but there seems to have been considerable shifting of the structure in the north-and-south direction. This, with some change in the actual length of the structure, made for a considerable variation in placement of the north-and-south walls. The structures occurred at different levels, and often the post-mold patterns of two structures would cross, or for a short space be nearly identical, due to molds from one floor extending from 18 to 24 inches below the level of the floor with which it was identified. Each of these structure patterns will be described separately by number as a feature.

As would be expected, occasionally portions of some early post-mold patterns had been destroyed by later construction, and it is rather surprising that as many as eight structures were still clearly discernible by almost complete patterns. It will be noted that the upper structure pattern began to show at a depth of only 1 foot below the top surface. The mound had been repeatedly plowed over with tractor-drawn gang plows, which not only completely destroyed all post molds touched but greatly assisted erosion by deep disturbance of the soil, and by dragging off a portion from the mound top with each cultivation.

No one may ever know how many different structures were erected on this site, but it seems well within the bounds of possibility that the height of the mound, when investigated, represented not more than half of its original height. The number of structures here would argue a considerable length of occupancy of this site, after it attained such importance as to demand a town house. The size of these structures would suggest a village of considerable population. The seventh and latest structure observable here—55 feet by 27 feet—could possibly seat 240 men, allowing each 6 square feet of floor space. If, for each person of sufficient importance to entitle him to a seat in the town house, we may assume four others in the village, the population here may well have numbered 1,000 inhabitants or more.

SPECIAL FEATURES

Various special features to the number of 42, other than artifacts and burials, will be described in order. Their location will be shown on the base chart (fig. 36) by the symbol F. O.

Feature No. 1.—A small ash pit 13 inches in diameter and 13 inches deep was found southwest of stake 12.5, associated with 13 small stones irregularly arranged. This pit was in the present humus layer and had been covered over by erosion from the top of the mound.

Feature No. 2.—A pile of 83 small stones with no apparent arrangement was found near stake 1.3 at a depth of 16 inches. This pile of stones lies in a slight depression under the eroded portion of the mound in the present humus layer. The pile was 4 feet by 3 feet and had in association a large fragment of pottery, a stone discoidal 2 inches in diameter, and a large animal bone.

Feature No. 3.—An area approximately 3 feet by 8 feet southwest of stake 1.4 contained 72 irregularly arranged stones surrounded by midden material. This area, also under the eroded portion of the mound, lies in a depression in the mixed clay and humus layer, just above the hardpan. In the midden fragments of pottery and bone were found. The stones in this area—limestone and sandstone—showed no evidence of burning; neither did the bone fragments show any action of fire.

Feature No. 4.—In the square 8.2–9.1, and 12 inches in depth, a group of 30 stones irregularly placed and associated with pottery fragments lay on the original humus surface.

Feature No. 5.—Southwest of stake 11.4 a circular area 5 feet in diameter and 10 inches below the surface had become a deep red in color because of fire action. The area was well-defined and hard-burned.

Feature No. 6.—Southwest of stake 11.5, 4 inches deep in the humus layer, seven stones, one quite large, were found in a close pile.

Feature No. 7.—Near stake 11.6, three stones, one large, were separated from a layer of ashes above them by a 3-inch layer of humus.

Feature No. 8.—Southwest of stake 1.8, at a depth of 20 inches, there was found a circular depression 3 feet in diameter and 5 inches deep, containing ashes and small stones.

Feature No. 9.—Southwest of stake 11.8 and 6 inches below the old humus line, an irregular area, shown on base chart, yielded a shell gorget, a stone pipe, and a stone celt, as shown in plate 48, *a.* This area was covered with burned logs. The artifacts were embedded in an ash and midden material layer 16 inhes thick. Four of the logs were uncovered for a length of 3 feet to 4 feet. They seemed to show no definite arrangement. Another log was found in square 10.8 at the same level. All were in such condition that they could be preserved for future study.

Squares 12.9, 11.9, 12.8, 11.8 yielded a large amount of potsherds. The original humus line, which was quite distinct to the west, melted away gradually between 0.10 and 0.9 into the midden material in which these artifacts were found. No floor line showed on any of the walls to indicate the presence of a structure to which the burned logs might have belonged. The post molds in this area, although numerous, did not seem to outline a structure.

Feature No. 10.—Southwest from stake 11.6 and 6 inches above the original hardpan there was a burned-clay area 5 feet by 6 feet. In this fire area the clay was baked to a deep red. It was surrounded by midden material embedded in the original humus, which contained some mussel shells. No structure could be defined about this area.

Feature No. 11.—Near stake 12.10 and 5 inches above hardpan 12 stones were piled together in a circular pit 10 inches in diameter.

Feature No. 12.—Southwest from stake 7.1 and 8 inches below the original ground surface there was found a burned-clay basin. This basin was mixed material just above the pure-clay hardpan. The material in which the vessel rested was different from the mixed material above the clay hardpan. A sharp line separated the two kinds of earth. This feature was taken out and its preservation attempted. However, contraction, due to loss of moisture, caused the specimen to crack badly.

Feature No. 13.—At stake 10.7, 6 inches above hardpan, a group of 17 stones embedded in ashes over an area 4 feet by 5 feet was found.

Feature No. 14.—This feature was a post-mold pattern in the hardpan defining a structure. It was roughly centered about stake 2.10 and was under that portion of mound area covered by eroded material. It was at a depth of 14 inches below the present surface. The pattern had maximum dimensions of 17 feet 9 inches length and 15 feet 8 inches width. The molds of this structure were irregularly placed but the shape of the structure was definable. Inside the large (outside) structure there may possibly have been the outline of a smaller structure, as the placement of the molds seemed to indicate that fact. Within this structure, near its southeast corner, was a well-preserved fire pit of irregular form about 6 feet by 8 feet. It contained bones, stones, and shells mixed in ashes. This structure and fire pit are shown in the foreground of plate 47. This structure may have predated the mound, and was, or had been, demolished when the larger structures in the mound were first constructed. Later erosion from the mound covered the remains of this structure and incorporated it in the mound area.

Feature No. 15.—Southwest of stake 11.10 was an ash bed 2 feet by 3 feet and some 3 inches thick.

Feature No. 16.—Near stake 9.3 there was a horizontal mold connecting two post molds in yellow-clay hardpan. It was sharply defined by black dirt running in a narrow strip in the yellow clay. The mold was 5 feet 5 inches long and 4 inches wide. These molds do not form a part of a defined structure.

Feature No. 17.—A fire pit, near stake 6.5, lay just below the top humus layer of the mound. This pit was so much disturbed and broken by the plow that it was impossible to determine its exact shape and orientation. The portion remaining was burned hard-red to a depth of three-fourths inch and showed a definite curved edge. It is believed that this pit belonged to the eighth structure in the mound center, described as Feature No. 23.

Feature No. 18.—At stake 8.5 and 6 feet above hardpan there was a circular arrangement of 26 stones of varying sizes, to form a basin. The basin was nearly circular, varying in diameter from 20 inches to 23 inches, and was 12 inches deep. This basin was filled with ashes and midden material, but from all evidence was not related to any structure.

Feature No. 19.—Above the area covered by the seventh structure, described later as Feature No. 27, many horizontal post molds were found centered about stake 7.6. These molds, shown in plate 49, *a*, were from 3.7 feet to 4.2 feet above the hardpan. They were defined by soft material and decayed wood in harder mixed material. There was a white ring of log mold around the soft decayed material. These molds of varying sizes were irregularly arranged from 2 inches to 5 inches above the structure floor. They occur virtually over the entire floor, but the greatest concentration is near the center of the structure pattern.

No evidence of fire was shown here, so it would seem reasonable to suppose that the seventh structure was demolished and not burned when the construction of the eighth building was begun. The entire absence of charcoal on this site at all levels seems to show that none of these structures were burned; and the nearly complete absence of horizontal molds at all levels, except this one, seems to indicate that the earlier buildings were removed from the site each time before a new building was erected. Had the buildings been allowed to collapse and fall in disarray, the wall and roof logs would surely have left horizontal molds at each level of a structure floor, as seems to have occurred in this instance.

Feature No. 20.—This feature shows the definite relationship which existed between the seventh and eighth structure in the center of this mound. As the mound was topped by removal of horizontal slices, the post-mold patterns of two structures were apparent. These proved to be the seventh and eighth structures built on this site. The floor of the eighth structure was 4 feet 4 inches above the hardpan and was so near the surface of the sides of the mound that it had been much damaged by the plow. The seventh structure floor was 3 feet 3 inches above the hardpan and was well preserved. The floor of Structure No. 8 was about 13 inches above that of Structure No. 7, and since this was about the depth below the floor of the post molds of Structure No. 8, their bottom was at about the same level as the top of the molds of Structure No. 7. This relationship is shown in plate 50, *a*. The tops of these molds represent the floor level in each case. Plate 51 shows the method of topping the mound and shows the seventh and eighth structures blocked out. The post molds of the eighth structure are visible along the higher of the two blocks. The post molds forming this structure indicate that the posts were from 7 to 10 inches in diameter, which is much larger than those previously reported from the other sites in the Norris Basin.

Feature No. 21.—Near stake 6.6 and from 5 feet to 5 feet 3 inches above the hardpan was an ash layer above the seventh floor and it was covered by a line of dark mold between this ash and the material above.

Feature No. 22.—About stake 8.8 post molds in the clay hardpan outlined a structure of four equal sides, each side being 12 feet 8 inches. The corners were not square. The pattern of this structure is shown in plate 49, *b*.

Feature No. 23.—This feature was the pattern of post molds outlining two sides of the eighth structure. This pattern was 4.4 feet above the hardpan and seemed to indicate a structure 21 feet by 24 feet. Only the south and east walls of the structure were indicated. The north and west sides of this post-mold pattern, which were not found, may have been plowed away, because on those sides they would have been very near the surface. Besides Feature No. 17, previously described, there was a burned area on the same level which was thought to mark a portion of the floor of this structure.

Feature No. 25.—On the north end of the post-mold pattern of the seventh structure and 15 inches above the hardpan was a horizontal post mold, clearly defined, filled with decayed wood and soft material. The mold was 26 inches below the floor level of the seventh structure. This horizontal mold is shown in plate 52 in the left foreground.

Feature No. 26.—This feature was the system of post molds which outlined the fifth structure on this site. These molds were 1.8 feet above the hardpan. There was no floor which seemed definitely related to this structure. The outline was complete, but the tops of these molds showed up at a slightly lower level than those of the sixth structure. Within this structure were two clay fire pits described as Feature No. 28. Plate 53 shows the seventh, sixth, and fifth structures and the horizontal post mold, Feature No. 25, as well as the two clay fire bowls which are described below as Feature No. 28.

Feature No. 27.—This was a post-mold pattern, shown in plate 54, *b*, and the floor defining the seventh structure. The surface was 3.7 feet above the hardpan. The floor was clearly defined and sloped toward the center from all sides. The floor had a general southeastward slope. Near the center of the area was an oval area about 3 feet long, much discolored by fire. The seventh structure, as shown by post-mold pattern in figure 37, was 53 feet long and 32 feet wide.

Feature No. 28.—Southwest of stake 7.5 there were two clay fire pits 1.9 feet above the hardpan. The northeast portion of both of these clay fire bowls was missing. This portion of the large bowl was probably destroyed in the building of the top and smaller bowl. The bowls were not quite concentric; both were made of hard-burned clay. It is thought, from their position, that these bowls were associated with the fifth structure, Feature No. 26. The larger bowl was approximately 1.9 feet in diameter and the smaller had a length of 16 inches and a breadth of 10.5 inches. The association of these bowls is shown in plate 50, *b*.

Feature No. 29.—The post molds outlining the sixth structure were 1.9 feet above the hardpan. The floor of this structure and the fifth structure seem to have been the same. That there were two different structures, separate and complete, on this floor at different times seems certain. Features Nos. 28 and 31 were so located as to have been almost in the exact center of the post-mold outlines. Figure 38 is a diagram of the sixth structure post-mold pattern which is well shown in plate 48, *b*. The post molds of this structure occurred at a slightly higher level than those of Feature No. 26. The fire pit, Feature No. 31, in the center of this structure, however, was at a lower level than the two fire bowls (Feature No. 28).

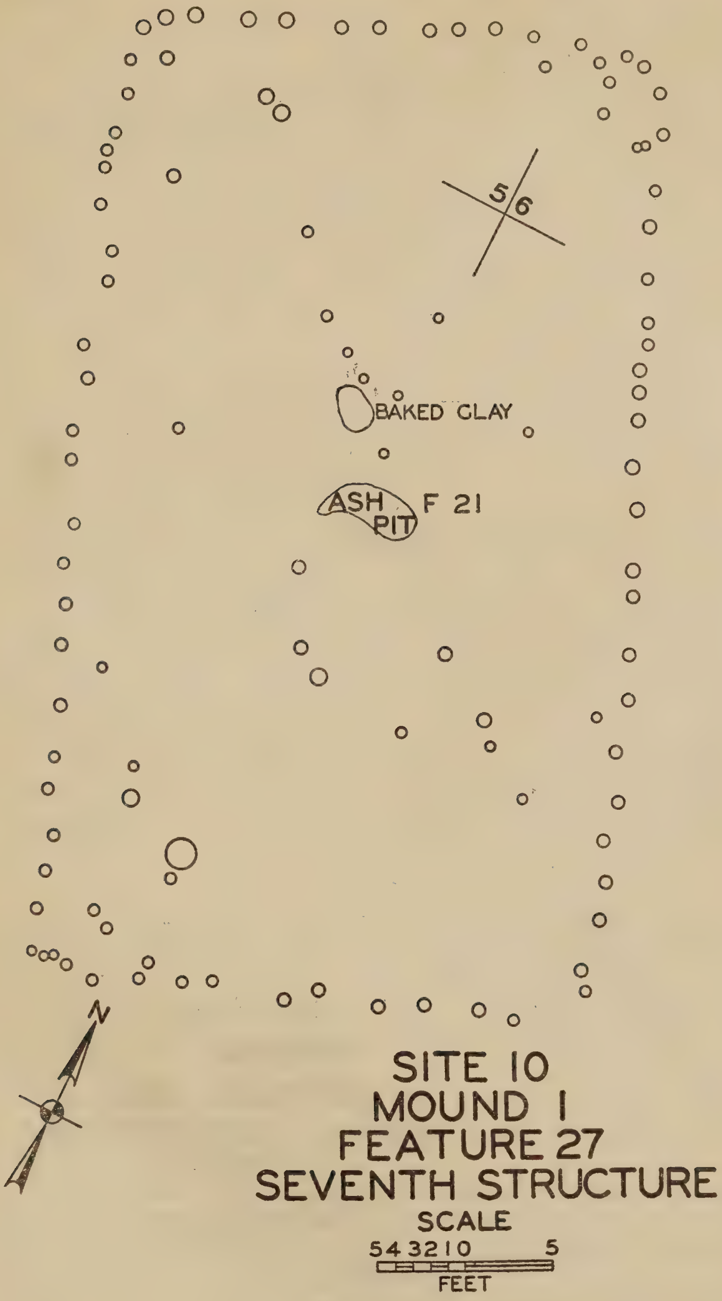

5/6
BAKED CLAY
ASH PIT
F 21
N
SITE 10
MOUND 1
FEATURE 27
SEVENTH STRUCTURE
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 37.

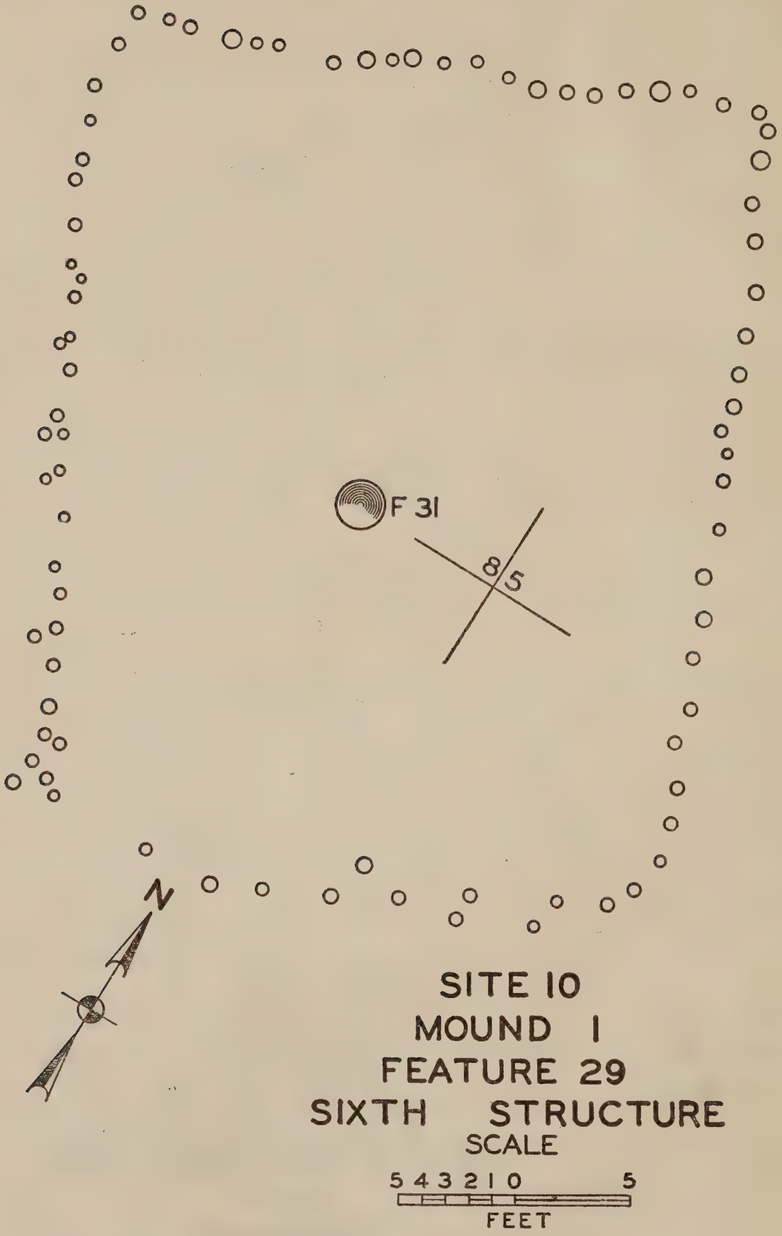

F 31
8/5
N
SITE 10
MOUND 1
FEATURE 29
SIXTH STRUCTURE
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 38.

Feature No. 30.—The post-mold pattern outlining the fourth structure was 13 inches above the hardpan. This pattern, shown in figure 39, indicated a building 37.4 feet long by 26 feet wide. The height of the floor of this structure above that of the tertiary structure, Feature No. 39, varied from 2 inches to 12 inches. Along the borders of the structure the difference was least. It was greatest in the center, and on the south end it ranged from 11 inches to 13 inches. Plate 54, *a*, shows the post-mold patterns of the third and fourth structures. The top of the rim of the fire pit, Feature No. 35, is on the level of the fifth floor. The earth has been cut down to the fourth-floor level all around it. Note the 6-inch rule set on end. On the fourth floor the surface in the center of the area was basin-shaped on three sides—the north, east, and west. This caused the great height of the precedent floor above this—the fourth floor—at the center, and brought the post molds of these three structures to almost the same level on the north, east, and west sides. Plate 54, *a*, brings this relationship out very clearly.

Feature No. 31.—Near stake 8.5 there was a baked-clay fire pit 15 inches in diameter and 6 inches deep, filled with midden at top and gray ash at bottom. This feature occurred in the center of the sixth structure, Feature No. 29, and was on the floor level of that structure.

Feature No. 33.—At the northern end of the seventh structure horizontal post molds were found just inside the pattern of vertical molds 15 inches above the hardpan. These molds were well-defined hollows partially filled with decayed wood. Their maximum length was 8 feet and their maximum diameter 6 inches. The molds are shown in plate 55, *a*. It is believed that these molds were made by roof logs which fell to the town-house floor when the structure was destroyed to make room for the erection of a new house above this floor level.

Feature No. 34.—This feature indicates the relation of two clay platforms found on the northern end of the primary and secondary floors. These platforms were easily defined, since they were made of clay and covered with midden. They were placed one just inside the primary structure wall and the other just inside the secondary structure wall.

Feature No. 35.—At stake 7.6 a clay fire pit was found 22 inches in diameter and 8 inches deep, filled with gray ash. This pit was on the floor of the fourth structure.

Feature No. 36.—Lying in the square 3.7–4.6, and precedent to the seventh structure in the mound, was a post-mold pattern in the original hardpan. This pattern shows an approximately rectangular structure 14.8 feet long and 13.8 feet wide.

Feature No. 37.—About stake 5.5 on the hardpan surface a group of some nine large stones were found standing on edge and irregu-

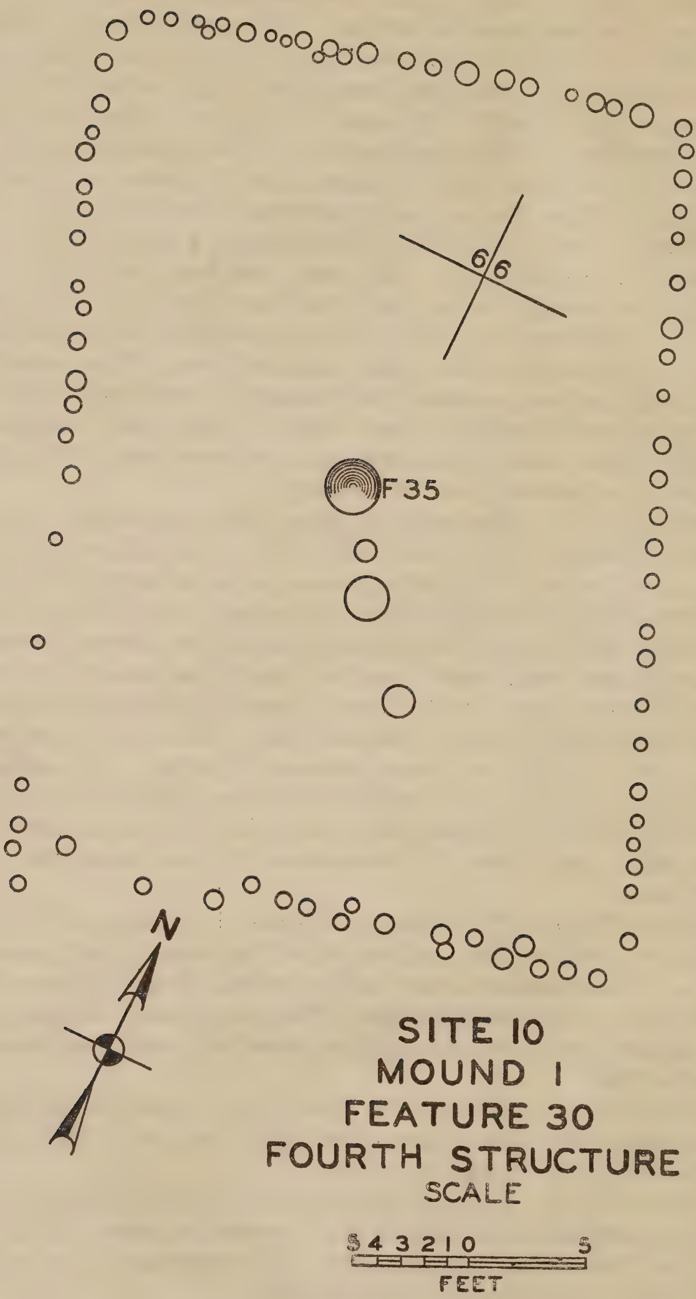
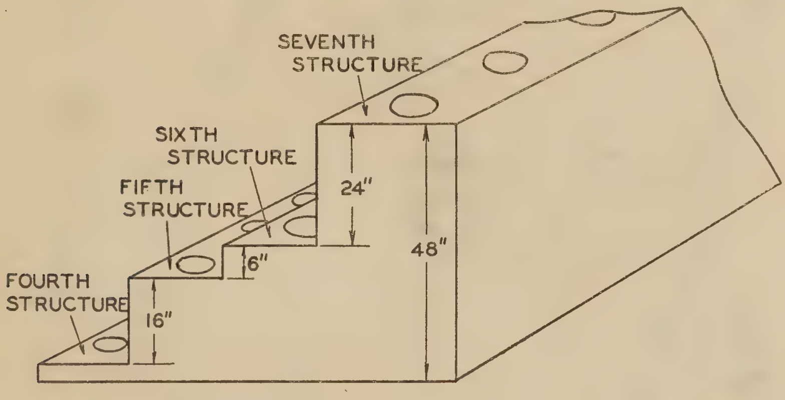

6/6
F 35
N
SITE 10
MOUND 1
FEATURE 30
FOURTH STRUCTURE
SCALE
5 4 3 2 1 0 5
FEET

Figure 39.

larly arranged. Each stone seemed to have been separately set in the hardpan. In the center of the group was a small fire pit of clay. No structure was definable as associated with this feature.

Feature No. 38.—This feature indicates the relationship between the fourth, fifth, sixth, and seventh structures. Plate 55, *b*, is taken from stake 6.4, looking eastward. Figure 40 is a drawing showing exact dimensions of these relations. It is to be noted that fifth and sixth structure levels differ but little.

Feature No. 39.—The third structure post-mold pattern is shown in figure 41. This pattern indicated a structure 25.5 feet long and 22.4 feet broad. In the center of the structure there was a red-burned area on floor 2.5 feet broad and 5 feet long. The floor of this structure at the south end was only about 2 inches above the secondary floor.



SITE 10
MOUND 1
RELATIVE STRUCTURE LEVELS

FIGURE 40.

Feature No. 40.—Figure 42 shows the ground plan of the secondary structure at a level of 3 inches above the hardpan. This structure would appear to be 41 feet long by 27.8 feet wide. Whether the outline in this figure is the correct one for the secondary structure depends on which molds are given to the primary structure. If the primary structure is the large one, as given in figure 43, all that can safely be said to belong to the secondary structure is the line of molds just south of the clay platform, Feature No. 41. If the primary structure is given by the smaller figures on Feature No. 42 this would “allow” a complete secondary structure as shown in figure 42.

Feature No. 41.—Near stake 9.5 on the secondary floor and just inside the south line of post molds a clay platform was raised 14 inches above the floor level. This feature was dug out and removed before excavations were completed, and it was determined that both primary and secondary floors extended beneath this platform. It should be noted that four of the post molds shown were double.

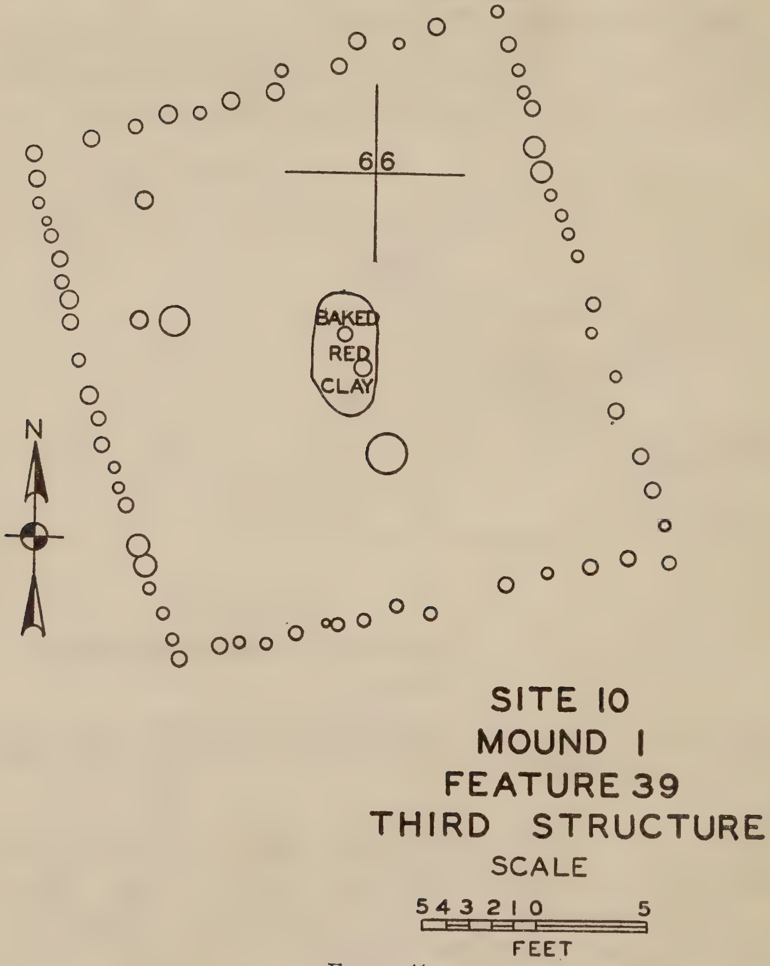


FIGURE 41.

Feature No. 42.—This feature was the post-mold pattern outlining the primary floor and structure. The correct interpretation of the system of molds shown in figure 42 is somewhat in doubt. The post-mold outline of the primary structure, on account of the great profusion of post molds, could not be determined with certainty. Figure

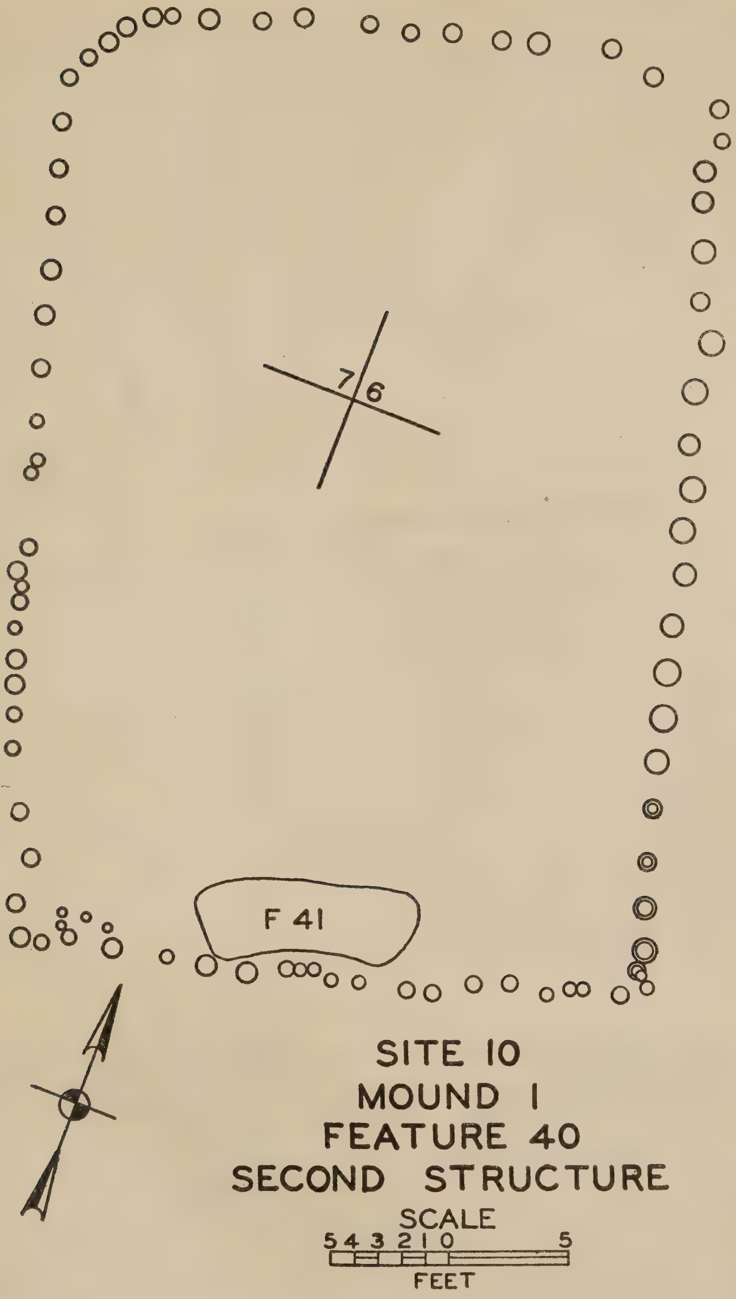

7
6
F 41
SITE 10
MOUND 1
FEATURE 40
SECOND STRUCTURE
SCALE
5 4 3 2 1 0 5
FEET

Figure 42.

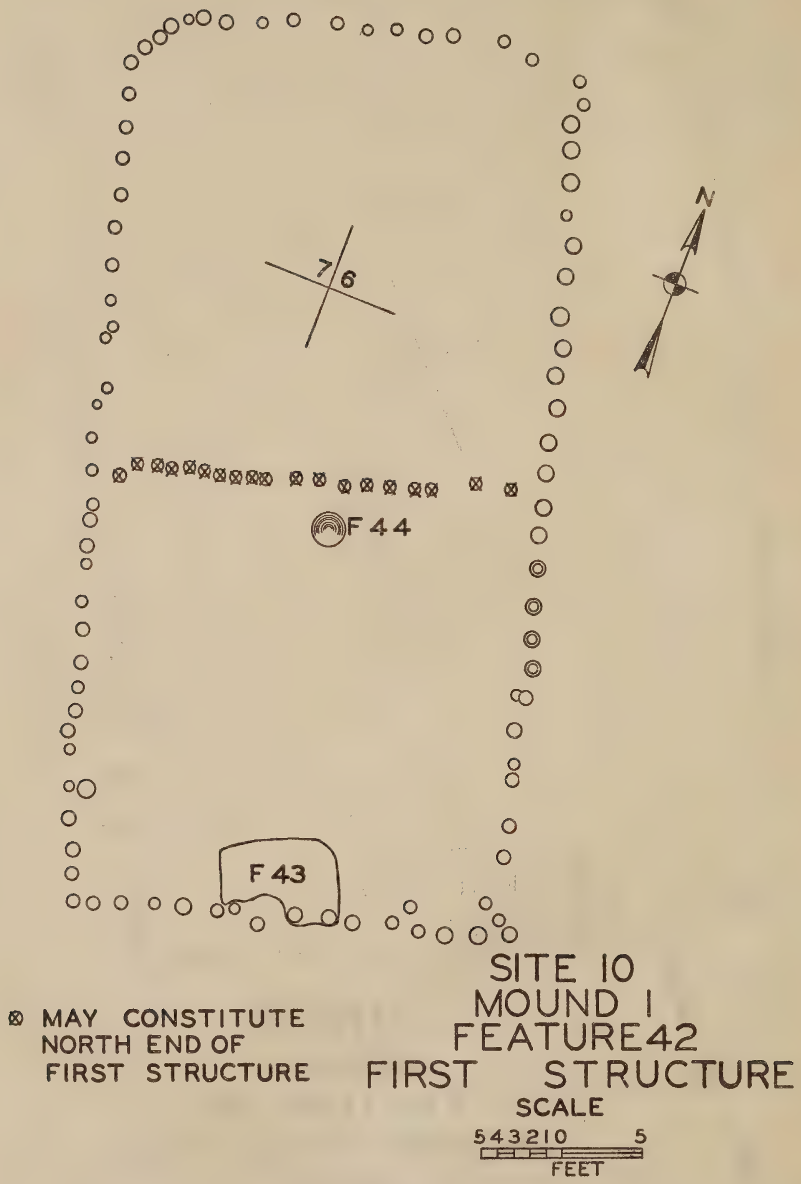

N
7/6
F 44
F 43
⊗ MAY CONSTITUTE
NORTH END OF
FIRST STRUCTURE
SITE 10
MOUND 1
FEATURE 42
FIRST STRUCTURE
SCALE
5 4 3 2 1 0 5
FEET

Figure 43.

43 shows two possible solutions of the problem. The diagram of this structure should be carefully compared with the diagram of the secondary structure, Feature No. 40. The holes in double circles appear to have been double, i. e., a large hole with a smaller hole inside. There was a definite soil demarcation in these doubled holes. Also there was a marked difference in hardness of the two colors of soil. The molds indicated by a cross in figure 43 may possibly be the northern end of the primary structure. If this is true, it would allow a complete secondary structure. Because of this uncertainty, the dimensions of the primary are either length 54.5 feet and width 28.5 feet or length 28 feet and width 27.6 feet.

Feature No. 43.—The clay platform on the primary floor was located just north of stake 10.5. It was 7 feet long by 5 feet broad and 11 inches thick. It was built on the primary floor which extended beneath it. Several post molds came down into it; but these were from the structure above and were not associated with the primary floor.

Feature No. 44.—On the primary floor, at stake 8.5, there was a circular fire pit 22 inches in diameter and 7 inches deep. From its placement it was believed to have belonged to the primary floor. The primary and secondary floors were identical at that point. It is situated near the center of the primary structure.

Burial No. 1.—Only one burial was found in this mound, that of a child probably about 6 years of age. It lay about 3 inches below the seventh structure near stake 7.5. It was embedded in yellow sand which lay in a depression of midden material. Due to the method of excavation in this portion of the mound, i. e., slicing by levels to floors, it was not possible to catch a vertical profile above the burial to determine if it was intrusive, and if so, the line from which the intrusion was made. All evidence, however, seems to indicate that burial was not intrusive. There was no evidence of burial on the floor of the seventh structure.

MOUND No. 2.

This mound, the smaller of the two, was located about 200 feet south of Mound No. 1. Plate 56, *a*, shows a view of this mound from the southeast, with Mound No. 1 in the distance. The original mound was probably about 70 feet in diameter, but like Mound No. 1, it had long been in cultivation and had been plowed down and much eroded. It was staked 90 feet by 90 feet to get an area well outside the original mound base. As usual, the southeast stake was designated 0.0. Excavation was begun by putting down a 10-foot trench along the south side of the mound and working out 10-foot squares one at a time. As shown in plate 56, *a*, trench floors were kept clean, and vertical profiles every 10 feet were photographed and recorded. The method of slicing in 10-foot trenches was continued until the presence of the remains of structures was detected. The method was then abandoned, and the mound was topped in horizontal layers and blocked out to uncover post-mold patterns. All four faces of the mound were cleared by trenching before horizontal slicing was begun. There were only three definite floors discovered, although indications of at least five structures were found within the mound proper. It is possible that there were as many as seven structures. When the trenches reached the original hardpan under the eroded portion of the mound a complex system of post molds was found, indicating the presence of a village site and long occupancy before the mound was constructed. Special features to the number of 23 were located on the base chart shown in figure 44, and are listed and described in order.

Special Features

Feature No. 1.—Outside the mound limits on the hardpan surface, near stake 2.8, a pile of stones was located. This pile of stones was in a charcoal area. Beneath them were animal teeth in a midden deposit. The pile was 2 feet in diameter and 11 inches thick.

Feature No. 2.—At stake 7.8 a circular pile of small stones, mixed with charcoal and midden material, was found. The pile was 2.5 feet in diameter and 9 inches thick. Associated with this material was a stone discoidal.

Feature No. 3.—Seven feet east of Feature No. 2 was another circular pile of stones in charcoal and bone refuse. It was 2.7 feet in diameter and 12 inches thick.

Feature No. 4.—Southwest from stake 7.2 and on the undisturbed base of the mound was an oval-shaped ash pit filled with ashes, charcoal, potsherds, small stones, and midden material. This pit was 3.8 feet long by 2.8 feet broad and extended down into the hardpan.

Feature No. 5.—About stake 8.1 there was a somewhat circular ash heap, appearing in the post-mold region, but surrounded by no definite outline. This heap of ashes was about 5.5 feet in diameter and 12 inches thick. It contained potsherds, animal bones, a clay quoit, and flint points.

Feature No. 6.—Southwest of stake 7.4 was an oval-shaped ash pit extending into the hardpan from the original humus. This pit was 4.3 feet by 3.2 feet. Its depth was uncertain since the walls had been broken down. It was filled with the usual midden material.

It was enclosed in a structure area, Feature No. 9, and may or may not have been associated with it.

Feature No. 7.—Immediately to the east of Feature No. 6 was a placement of stones in the charcoal area, above the hardpan, and

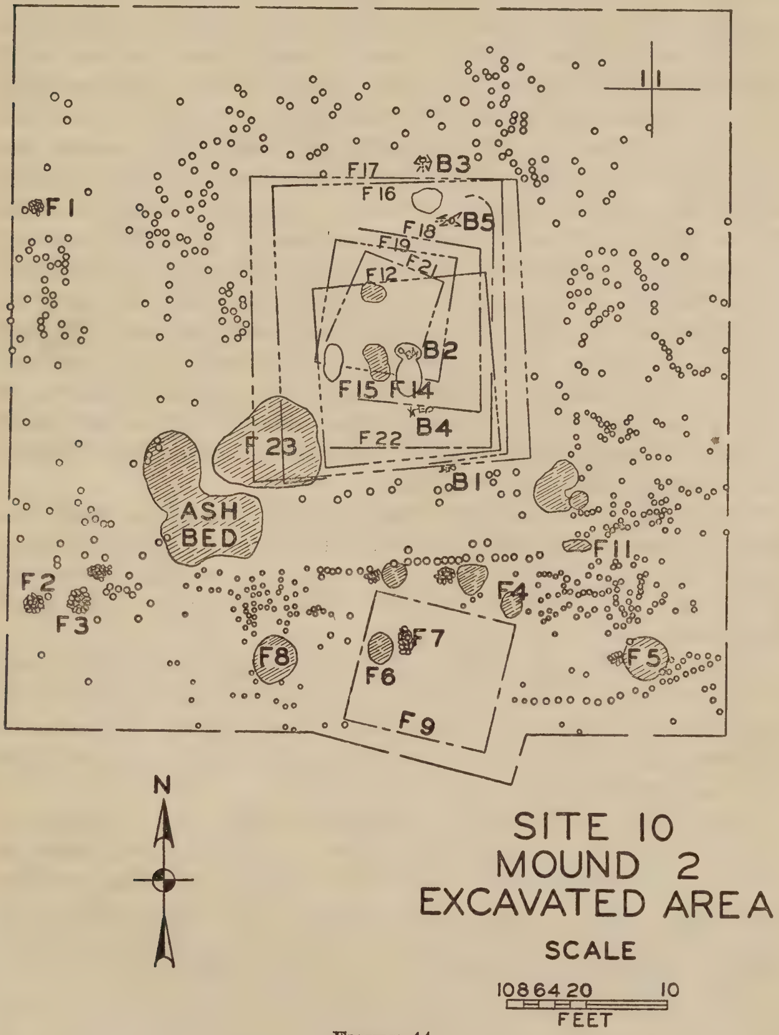

11
F 1
F17
F 16
B3
B5
F18
F19
F21
F12
B2
F15
F14
B4
F 22
F 23
B1
ASH
BED
F11
F2
F3
F4
F7
F8
F6
F5
F9
N
SITE 10
MOUND 2
EXCAVATED AREA
SCALE
10 8 6 4 2 0 10
FEET

FIGURE 44.

just north of stake 8.4. This stone area was 3.3 feet by 1.3 feet and 6 inches thick. The stones were widely separated and mixed with charcoal, animal bones, shell, and potsherds.

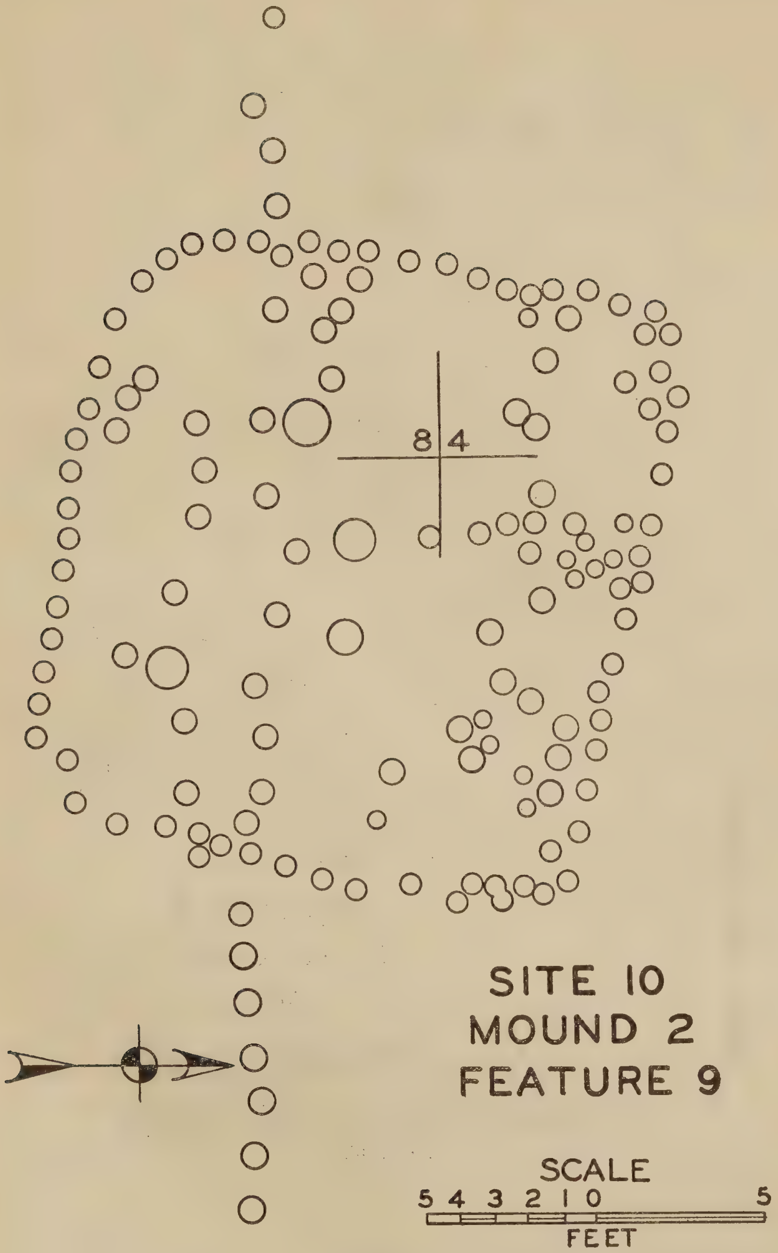
Feature No. 8.—Southwest from stake 8.5 was another nearly circular ash pit 6.2 feet long by 5.8 feet broad. The base was flat and 4 inches below the surface of the hardpan.

Feature No. 9.—This feature was a well-defined structure outlined by post molds—probably a small dwelling house. It was roughly rectangular and 18 feet by 16 feet in size. Within this structure, besides Features Nos. 6 and 7, were four small pits, some of which may have been fire pits. Except for a portion of its northern edge, which extended under the mound, and was precedent to it, this structure was outside the mound area. Numerous post molds appeared within the structure area. Most of these molds probably had no connection with the structure itself. A long row of molds running east and west extended through the structure pattern and may have been an arbor, since no additional molds could be found that would complete a larger structure. The row of molds extended 20 feet east and 15 feet west of this structure. Since this line runs directly through the structure it would seem that arbor or windbreak was precedent or constructed at a later date than the structure through which it runs. This long line of molds is shown in plate 58, *a*, in the center of the south trench. Figure 45 shows a ground plan of this structure. Plate 57 shows this post-mold pattern in relation to the mound. A longitudinal section of these post molds by trenching was made to discover whether if possible any horizontal molds existed. None were found.

Feature No. 10.—Southwest from stake 6.1 an earthen vessel was found, placed in an upright position in the clay and gravel hardpan. Surrounding it to a depth of 6 inches were ashes and bits of charcoal. It was in a post-mold area, but no definite structure outline could be determined.

Feature No. 11.—An oblong ash pit near stake 7.2 was filled with midden material. This pit, 3.2 feet long by 1.4 feet broad, was 10 inches deep and extended well down into the hardpan. Its preservation was perfect, being cut in very hard yellow-clay hardpan filled with black midden soil.

Feature No. 12.—This was a post-mold pattern shown in figure 46. This structure pattern was 3.3 feet above the hardpan and located as shown on the base chart of Mound No. 2, figure 44. The structure was approximately 25 feet square and contained Features Nos. 13, 14, and 15, and Burials Nos. 1, 2, and 4. This structure pattern was well defined. The floor was definite and showed evidence of fire in a number of places, but no indication of a burned structure was found. The molds were from 4 inches to 6 inches in diameter, usually shallow. On the north end the floor extended outward from the line of molds for a distance of 5 feet. Plate 59 shows this pattern as the inner row of three. In the plot of figure 46 those molds, indicated by a cross, appeared only when the floor was being cleaned. They were charted at this level, but probably belonged to a structure be-



8
4
SITE 10
MOUND 2
FEATURE 9
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 45.

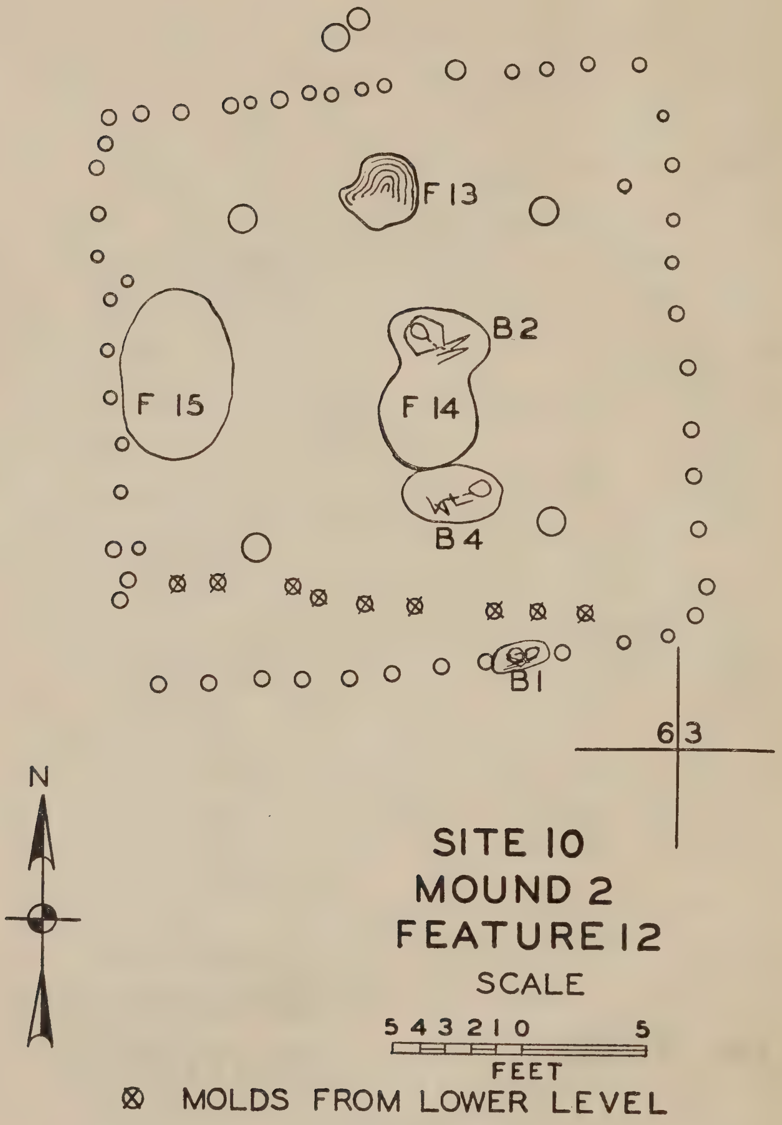

F 13
B 2
F 15
F 14
B 4
B 1
6 3
N
SITE 10
MOUND 2
FEATURE 12
SCALE
5 4 3 2 1 0 5
FEET
⊗ MOLDS FROM LOWER LEVEL

Figure 46.

neath Feature No. 16. In this structure the symmetry of the placement of four large molds, one near each corner, should be noted. These probably were made by roof supports.

Feature No. 13.—Near stake 3.4 was a burned-clay fireplace associated with Feature No. 12. This fireplace was 3.3 feet above the hardpan, and was approximately 34 by 32 inches, with a maximum depth of 9 inches. The pit was well defined but irregular in shape. It was constructed of burned yellow clay. It was located near the north side of structure Feature No. 12. It was filled with ashes and charcoal and there was one stone discoidal close by.

Feature No. 14.—South of stake 4.4 was a well-defined pit of elaborate construction. The top of this pit was 3.3 feet above the hardpan. This pit was 53 inches long, 48 inches wide, and had an interior depth of 34 inches. Figure 47 is a plan of this pit. The red clay sides of this pit extended about 2 inches above the floor of the structure Feature No. 12. When the pit was cleared of ashes it was found that the clay walls had been burned to a depth of 3 feet. The floor was lined with pine bark which had been charred. Charred wood—evidently small posts set on end—was found around the south end of the pit. It was later determined that this vertical-post wall had been placed around the whole pit. The south portion of the floor was heaped with chunks of burned clay, under which was found a layer of split cane weaving. When the top layer of weaving was removed four stone discoidals, one large, were found. Two of these had been cracked by heat. Pieces of a charred bone tool and a large chunk of graphite were also found. This bone implement, when restored, appeared to be a spear point (pl. 68, *b*) quite similar to others found on this site. These articles were embedded in a charred black mass of light and porous material. No structure remained. This black carbonaceous material seemed to have been fused by heat and then reduced to carbon. Nothing remained to suggest its original form. Under this mass was more cane weaving, lying on the bark-covered floor.

No charred bones, either human or animal, other than the tool mentioned, could be found in the ashes, although a careful search was made on the supposition that this might have been a cremation.

From the fact that there was charred cane matting both above and below the artifacts, it appeared that these objects, with some form of carbonaceous material, had been placed in a bag or box of woven fabric and put on the bark-covered floor of the pit, which was lined with small vertical posts. The whole was then burned, and as the walls of wood were consumed in part, portions of the clay wall fell off in chunks on top of the material in the pit. Finally the pit was filled with ashes. Plate 60, *a*, shows this pit with walls extend-

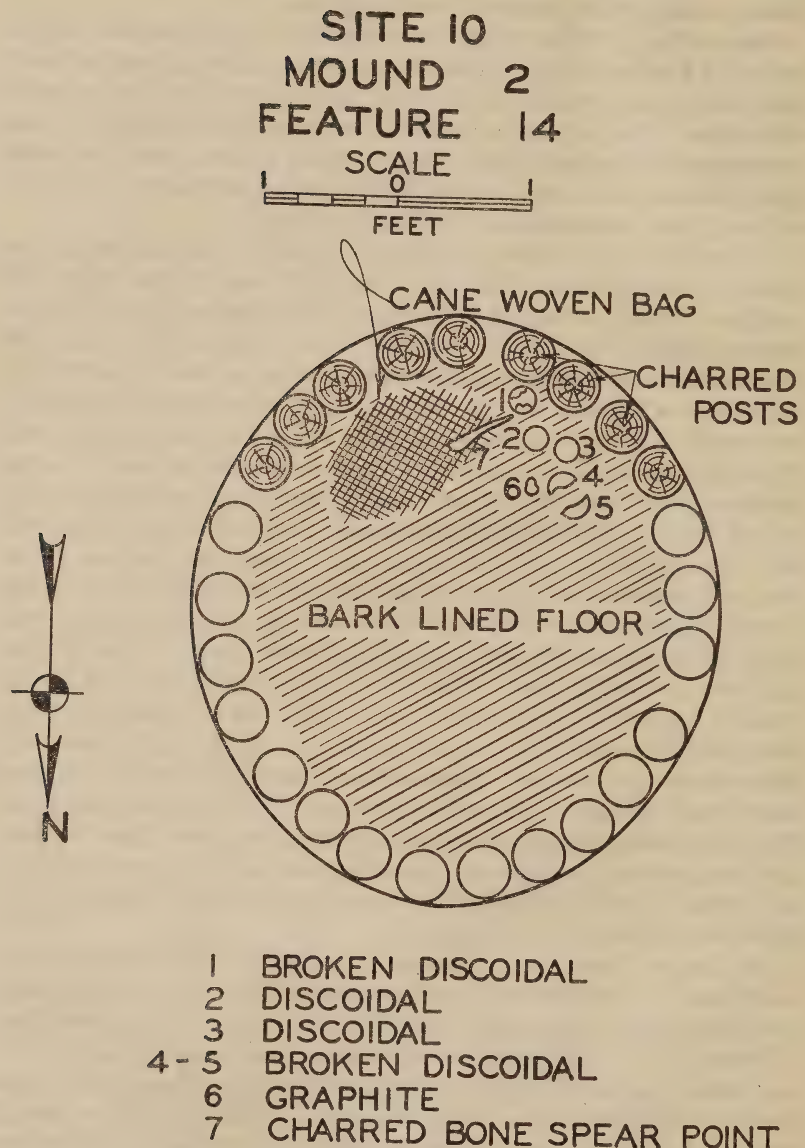

SITE 10
MOUND 2
FEATURE 14
SCALE
1
0
1
FEET
CANE WOVEN BAG
CHARRED POSTS
1
2
3
4
5
6
7
BARK LINED FLOOR
N
1 BROKEN DISCOIDAL
2 DISCOIDAL
3 DISCOIDAL
4-5 BROKEN DISCOIDAL
6 GRAPHITE
7 CHARRED BONE SPEAR POINT

FIGURE 47.

ing up to the level of the structure floor, Feature No. 12, with which it was surely associated. Plate 60, *b*, shows a portion of the charred parts in situ, forming the south wall. Remnants of the woven cane matting covering the artifacts may be seen.

Feature No. 15.—South of stake 4.5 a clay pit appeared on the same floor level as Feature No. 14. This pit was not lined with burned clay and the contents showed no evidence of burning in situ. It was, however, filled with ashes to a depth of some 4 inches. These ashes contained potsherds and charred wood. Below this the fill was of the usual midden material. This pit was 7 feet long, 4.6 inches broad, and had an interior depth of 29 inches.

Feature No. 16.—At 34 inches above the hardpan a second post-mold pattern was discovered. The post molds were so numerous at this level that it was difficult to determine exactly what molds should be assigned to this level. Some shallow molds protruded from the structures above, and a few may belong to lower levels. The floor here was a definite one, and was covered with a thin layer of white sand. The extension of molds from the structure above, and the extension of deep pits through this floor, increased the difficulty of determining which molds belonged to the structure at this level. At this level on the northern end, as the floor was being shaved off to complete a line of post molds, Burial No. 5 was encountered. In plate 56, *b*, the top level shown is the floor described as Feature No. 16.

Feature No. 17.—At 22 inches above the hardpan a third post-mold pattern, outlining a structure, appeared, as shown on the base plat, figure 44. The molds were well defined and indicated a rectangular structure 36 feet long by 33.5 feet wide. At the time the photograph (pl. 61) was taken the holes varied from 12 inches to 15 inches in depth, but they were much deeper when originally found. The south row was located with difficulty and only by shaving deeper than the other sides. On the northern end some holes seemed to be missing, and three located there, indicated by a cross, may have extended downward from the structure above. In the southwest corner, due to an extension of a midden area, Feature No. 23, no molds were observable.

Feature No. 18.—At 20 inches above the hardpan a post-mold pattern indicated a skewed rectangular structure, some 22 feet long and of undetermined width. The extension of Feature No. 5 downward and the nearness of the floor of Feature No. 17 obscured or destroyed the western boundary of this structure.

Feature No. 19.—At 22 inches above the hardpan a definite post-mold pattern showed a structure nearly square, 17 feet long by 17 feet wide. The southern side of this pattern had been destroyed by the intrusion of Feature No. 15 and Feature No. 14. There was a well-defined floor about the center of this structure, built up of clay. It was not easy to follow this floor out to the edges. A post-mold pattern, Feature No. 21, showed up within and a few inches lower than this one. The molds of both these structures were 18 inches or more deep. Associated with this structure was a fireplace designated as Feature No. 20.

Feature No. 20.—Northwest from stake 4.4 there was a burned area, 54 inches by 48 inches, with a depression on a well-defined floor. Within the depression a circular hole 8½ inches in diameter and 10 inches deep contained large fragments of an earthen vessel. A large potsherd appeared to have been the bottom of an inverted pot. Nearby, and to the northwest, was a second depression 15 inches in diameter and 12 inches deep which was filled with midden material but which contained no ashes. The floor area around this fireplace sloped inward from all directions.

Feature No. 21.—This feature was an irregular outline of post molds, quite deep and definite. The pattern was incomplete because of intruded pits, Features Nos. 14 and 15. There was no definite floor observable, in association here, but the outline probably represents a small structure about 9 feet by 11 feet.

Feature No. 22.—About 15 inches above the hardpan there was a pattern of post molds which seemed to form two sides of a structure. This structure seemed to have been 28 feet long by 21 feet wide. The holes are all well defined but some are very shallow.

Feature No. 23.—In the square 5.6–6.5 and extending westward from it there was a large midden heap. The irregular area of this midden was approximately 13 by 11 feet. It was about 3 feet deep, extending down to and into the hardpan level a few inches. This midden contained many broken implements of bone and stone, as well as the usual material. Because of this midden, several lines of post molds could not be continued, as molds not only did not show, but would not have retained their form. When the midden material was removed the base was a conical depression in the hardpan, which showed evidence of fire.

BURIALS

Burial No. 1.—Southwest of stake 5.3 at a depth of 40 inches there was an extended burial of a child. The preservation was fair. In association with the burial there were found 185 small perforated shells, 3 shell beads, and 7 small shell gorgets. This burial appeared at about the level of the floor on the top structure, Feature No. 12. It was probably intrusive, since a post mold of one side of the structure was encountered beneath the burial.

Burial No. 2.—This burial of an adult male in a sitting posture, the feet folded under the body, was found near stake 4.4. The knees were flexed and leaning slightly to left from the hips. The skull was dropped forward, face downward, as shown in plate 58, *b*. The position of this burial in the mound, relative to the floor level, is shown in plate 62, Feature No. 12. It was first thought that this burial was associated with the pit, Feature No. 14. It was decided later that the pit in which the burial was placed had been intrusive in the larger pit, Feature No. 14. The north end of Feature No. 14 had been cut away when the pit for Burial No. 5 was made. Therefore, the skeletal remains rested more or less on the edge of the burned side of Feature No. 14. The top of the pit which contained Burial No. 5 was encountered at the level of the top structure, Feature No. 12. Associated with Burial No. 2 were many artifacts and other mortuary offerings, including 14 flint points, 3 graphite balls, a piece of quartz, 4 stone celts, mica, 2 wooden copper-covered ear ornaments, a bone hairpin, shell and pearl beads, a copper bead, a bone awl, a shell dipper, a clay quoit, and lumps of hematite and lead sulphate. Much of this material is shown in plate 64, *a*.

Burial No. 3.—Near stake 2.4 an adult was buried in a circular pit, in a sitting posture, knees flexed. The body had bent forward and the skull had fallen face downward. This pit was 35 inches by 29 inches and 14 inches deep. The bottom of the pit rested on clay hardpan. This burial is shown in plate 63, *a*. Associated with it was a bone tool (pl. 67, *b*, lower right corner), a fragment of copper, other minerals, two shell hairpins, and a number of shell beads. A dog had been buried across the feet of this skeleton, as shown in plate 63, *a*.

Burial No. 4.—Near stake 5.4 a fully flexed burial of an adult male was found in an oval pit 48 inches by 28 inches and 15 inches deep. Preservation of lower extremities good, but that of the skull poor. The body was on the left side with the head to the east. Some of the ribs and vertebrae were missing. There were five large conch-shell beads and five small beads at the left wrist; three conch-shell beads and two small beads at the right wrist. A flint point had penetrated the lower sacrum and remained embedded there, as shown in plate 65, *a*. The artifacts from this burial are shown in plate 64, *b*.

Burial No. 5.—Southwest of stake 2.3 an adult male was buried in a sitting posture in a circular pit, 34 inches in diameter and 26 inches deep. This pit was encountered a few inches below the level of Feature No. 16. The preservation was fair. The skull had fallen forward and rested on the legs which were flexed at the knees and were under the body (pl. 63, *b*). Associated with this burial were two stone celts, shell beads at the wrists, a bone awl, graphite balls, and a small piece of mica.

Northwest of this burial at a distance of 23 inches was a burial of a small dog. It appeared in a midden area, deposited 7 inches higher than Burial No. 4. The dog burial was not certainly associated with Burial No. 5.

POTTERY

Since no excavations were possible in the surrounding village all pottery from this site was taken from Mounds Nos. 1 and 2. There seemed to be no difference in the pottery complex from the two mounds. The sherds are fairly well preserved, with a predominance of heavy ware. The types, in form and relative abundance, follow closely those illustrated in Site No. 11. There was no evidence here of zoomorphic forms. Large vessels of fairly coarse texture, shell-tempered, cord-paddle-marked, or textile-impressed, appeared in abundance. There was some evidence of resmoothing the surface of vessels after paddling. Both round and strap handles were found in small number. Both flat and round lugs were observed. The flat lugs occurred both on the rim and below it. The practice of deforming a circular rim to an approximate square by putting it upward at the four corners, as illustrated in plate 79, *a*, was found here. Below each point thus produced was a round lug. Plate 65, *b*, is a small pot 5.25 inches in diameter of plain ware taken from a midden pit in Mound No. 2. One sherd was found which evidenced the outside application of red paint. Two sherds of stamped ware were found.

ARTIFACTS

From the general excavation in the mounds only a few artifacts were found which were not associated with burials. Plate 66, *b*, shows the forms of arrow points and celts found. There is also illustrated a spool-shaped pottery object, a polished flint chisel, a crude slate spear point, and fragments of stone pipes.

Plate 67, *a*, illustrates other pipes from this site. Four are stone, but the second and third from the right are pottery. No. 6, on the extreme left, is an unfinished pipe form with a rough pecked surface. Discoidals were quite numerous in both mounds. These were made from a variety of materials, including limestone, sandstone, granite, quartz, dolomite, cannel coal, basalt, iron carbonate (hematite coating), and potsherds. Potsherds used for this purpose show both cord-paddle marks and textile impressions. Relatively few of the stone disks are decorated or drilled.

Bone artifacts found include worked antlers, awls, and cut bone. Plate 67, *b*, shows shell pendant and fragments of hairpins and bone fishhook, with a variety of bone and antler awls.

Artifacts from Burial No. 2, Mound No. 2, are shown in plate 64, *a*. The large ceremonial celt is 9 inches long and is made of native Tennessee slate. It was apparently held in the hand at time of burial. For positions of the other artifacts, three celts, mica, shell cup, beads, awl and arrow points, see plate 58, *b*. The 14 arrow points are rough, triangular points of rather crude chipping. The copper ear ornaments each consist of a wooden disk of 1.5 inches diameter and 0.2 inch thick. A groove was cut about the edge of the disk and a thin sheet of copper was spread over the outside and crimped about the edges of the disk in the groove. While the copper sheet was much oxidized, the wood was well preserved. In the figure the outer face of one ornament is shown and the inner face of the other with dowel pin, still preserved.

Plate 64, *b*, shows rectangular shell pendants from Burial No. 1. These range in size from 1.1 inches to 0.6 inch. The ear pins of shell, which are 5 inches long, were taken from Burial No. 3, Mound No. 2, as were the large shell beads made from the central column of large conch shells.

Plate 65, *a*, shows the sacrum of the skeleton from Burial No. 4. A flint point was found embedded in the lower extremity of this bone. It was photographed without being removed. This point was a small triangular arrow 0.4 inch at the base and in length not over 0.8 inch. It would hardly be thought to be an efficient instrument on an arrow designed to be used against man.

Plate 66, *a*, shows fragments of matting taken from the cache pit in Mound No. 2. One of the discoidals found in association, which was split by the heat which burned this cache, is shown in upper lefthand corner. The lower surface of this disk had received a deposit from the ashes which were in contact with it. Where the disk was in contact with the cane matting this deposit did not form. There was thus an impression of the matting on it, as shown.

Plate 68, *a*, shows a cache of periwinkle shells from a midden pit and a cache of charred corncobs from Mound No. 2.

Plate 68, *b*, shows four very similar artifacts made from the central hollow cylinder of a hard bone. One of these, which is blackened by fire, was taken from a cache of burned matting in Mound No. 2. This implement had been broken in many small fragments by the action of fire. It was not until it was restored that its nature was determined. These pointed implements are believed to be spear points. The pointed end is quite sharp enough to be an efficient spear, and the basal end is cut squarely off and reamed out inside as if to receive the end of a blunt shaft. Each has a single hole drilled through the bone on one side, as if it were to be attached to the shaft by a dowel pin. So far as is known, such bone implements have been reported but once previously.[1]

CONCLUSIONS

The type of structure patterns and the artifacts taken from Mounds Nos. 1 and 2 seemed to be identical in kind and there was no reason to doubt that the mounds were built by the same people. The structures in these two mounds may have been contemporary, as it was not possible to attach any precedence to one over the other.

Both mounds were erected upon a village site, a fact which appeared to indicate that the site of each of these first earth-covered houses had been formerly occupied by one or more small dwellings.

The construction was designated as "large-log type." The logs used as posts were generally much larger than in the "small-log type" of construction, and the molds were much farther apart and their posts were not seated in trenches.

The earliest structure in each of these mounds was made of logs not much larger than those used in Sites Nos. 2, 5, 9, and others of that type, but the posts were set much farther apart.

As the later buildings were erected in succession on these mound sites the structure generally became larger. The logs were larger and they were placed still farther apart. Structures Nos. 7 and 8 in Mound No. 1 had many molds as large as 14 inches in diameter, and they were generally as far apart as 3 feet or more. The manner in which this construction differed from that of other sites will be discussed in a later chapter.

Perhaps the most important find at this site was the use of pit burials in the floors of houses. Here, in three out of four adult burials the body was *definitely placed in a pit in a sitting posture*, surrounded with an unusually large number of artifacts and often accompanied by the burial of a dog. No pottery was used as a mortuary offering. That manner of burial was so definite and different from other types of burial customs that it could but be regarded as very significant.

Bushnell[2] points out that the custom of burial beneath the floors of houses was practiced by at least two of the Muskhogean tribes, the Chickasaw and the Creeks. It appeared that while both of these tribes buried in pits below house floors, yet this decided difference existed: the Chickasaw buried in a shallow grave, placing the body in a partially flexed position, while the Creeks used a deep pit and placed the body in a sitting posture. Further, the Creeks seemed to have been the only one of the tribes reported to have deposited a wide variety of objects in the grave, and also sometimes to have included dog burials. For purposes of comparison it may be well to quote a number of the statements of early observers of these customs. Particular notice should be taken of the time when such observations were made.

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[1] Thomas, Cyrus, 1894, p. 382, fig. 259.

[2] Bushnell, 1920, p. 110.

Bartram,[3] who traveled among the Creeks about 1790, has this to say:

> The Muscogulges bury their deceased in the earth. They dig a four-square deep pit under the cabin or couch which the deceased lay on, in this house, lining the grave with cypress bark, where they place the corpse in a sitting posture, as if it were alive; depositing with him his gun, tomahawk, pipe, and such other matters as he had the greatest value for in his life time.

Of the Creek customs, Romans,[4] who traveled among them in about 1770, reports as follows:

> The dead are buried in a sitting posture, and they are furnished with a musket, powder and ball, a hatchet, pipe and tobacco, a club, a bow and arrows, a looking glass, some vermillion and other trinkets, in order to come well provided into the land of spirits.

Pope[5] traveled in the Creek country in 1791, and of the Creek burial customs he has said:

> Upon the decease of an audit of either sex, the friends and relations of the decedent religiously collect whatever he or she held most dear in life, and inter them close by and sometimes in their owner's grave. This pious tribute to their dead includes horses, cows, hogs, and dogs, as well as things inanimate.

In 1790, Maj. C. Swan, an Army officer, visited the Creek Nation and made a report of the customs of the people whom he had seen in his travels. This report was quoted by Schoolcraft[6] as follows:

> When one of a family dies, the relations bury the corpse about 4 feet deep, in a round hole dug directly under the cabin or rock whereon he died. The corpse is placed in the hole in a sitting posture, with a blanket wrapped about it, and the legs bent under it and tied together. If a warrier, he is painted, and his pipe, ornaments, and warlike appendages are deposited with him. The grave is then covered with canes tied to a hoop around the top of the hole, and then a firm layer of clay, sufficient to support the weight of a man. The relations howl loudly and mourn publicly for 4 days. If the deceased has been a man of eminent character, the family immediately remove from the house in which he is buried, and erect a new one, with a belief that where the bones of their dead are deposited, the place is always attended by "goblins and chimeras dire."

It seems to have been the general custom, however, after burial beneath the floor of a structure, to continue to use the house. Bushnell points out that while some tribes had certain distinctive burial customs, yet no tribe held rigidly to one custom, but followed many different methods of disposal of their dead; so that on any one site it is to be expected that several forms of burials may appear. However, while certain customs may not be universal in a given tribe, yet they may be distinctive. In this connection, the placing over and under the body slabs of wood and bark is regarded by Bushnell as a custom common to the Creeks. Of this last there will be further discussion later.

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[3] Bartram, William, 1792, pp. 513–514.

[4] Romans, Bernard, 1775, pp. 98–99.

[5] Pope, John, 1888, p. 58.

[6] Schoolcraft, H. R., 1851–57, vol. V, p. 270.

This body of evidence on burials in a sitting posture has been derived from reports of early travelers in the historic period. There has been very little archaeological evidence on this point from sites wholly within the prehistoric.

Jones,[7] in writing of the Florida Indians, says:

> Not infrequently the dead was interred in a sitting posture.
>
> Such was the case in a large mound carefully opened by the writer upon the Colonels Island. The corpse had evidently been placed upon the ground and held in position while the loose sand was heaped around and above. In the neighborhood of the feet and hands were numerous bone and shell beads which, at the time of the inhumation, encircled the wrists, arms, and ankles. Near the skeleton lay three stone axes, several spear and arrow heads, two pipes of rather unusual size—one of clay and the other of steatite—and a terra cotta bowl, the property of the deceased at the period of his death.
>
> In another mound the body had first been seated in the centre of the spot to be surmounted by the tumulus, and there, with his possessions deposited by his side, was securely encased in a covering of tenacious red clay, 6 or 8 inches in thickness, and oven-shaped. In this manner—the clay becoming dry and hard—the sitting posture was maintained while the earth-tomb was heaped above.
>
> Sometimes a stout light-wood post was first driven into the ground, and the dead, seated with their backs to the posts, were securely lashed to it by means of thongs or grapevines. Two instances of this sort have been brought to our knowledge. In one mound a single skeleton was found at the foot of the post. In the other the remains of three skeletons appeared, back to back, the post being in the centre.
>
> Captain Bossu[8] informs us that the Alibamons buried their dead in a sitting posture, stating, in justification of the custom, that man being upright, should have his head turned toward heaven, which was to be his habitation. "They give to them", he continues, "a calumet and some tobacco to smoke, that they may make peace with the inhabitants of the other world. If the corpse be of a warrior, he is buried with his arms, which are a musket, some powder and bullets, a quiver full of arrows, a bow, and a hatchet, or club; and besides these a mirror and some vermilion with which they may dress themselves in the other world."

It would appear from these statements that the burial customs of the Muscogulges, as reported by these observers, were quite similar to that found on Site No. 10. By this it is not meant to state, or even imply, that the occupants of Site No. 10 were Creeks, or any of the other Muskhogean tribes. It is only desired to call attention to this

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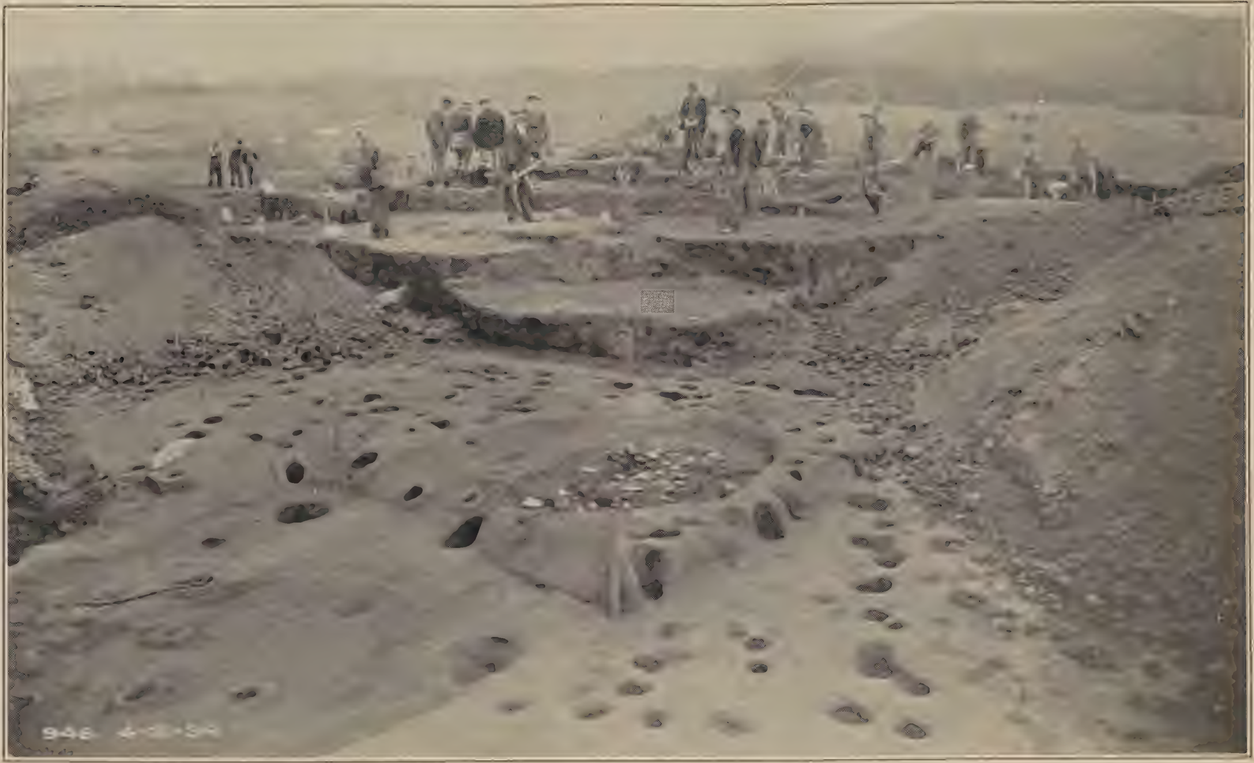
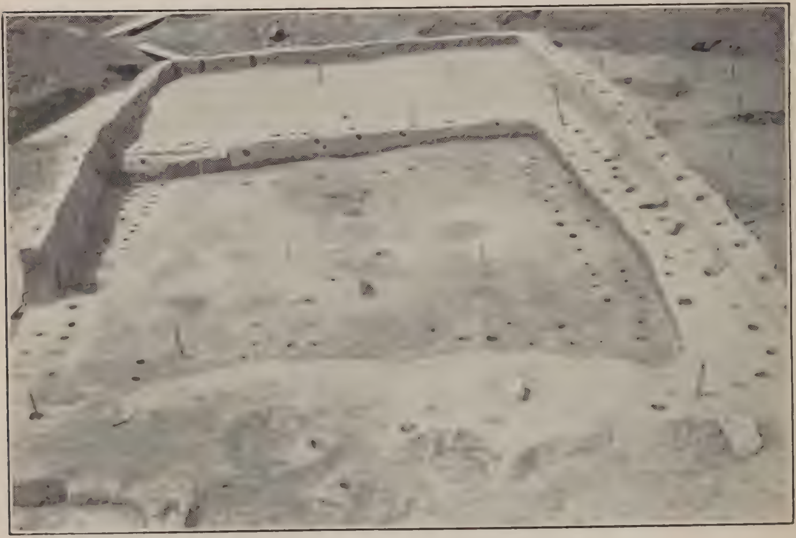
[7] Jones, Charles C., 1873, pp. 183–184.

[8] Bossu, Capt., 1771, vol. 1, p. 257.

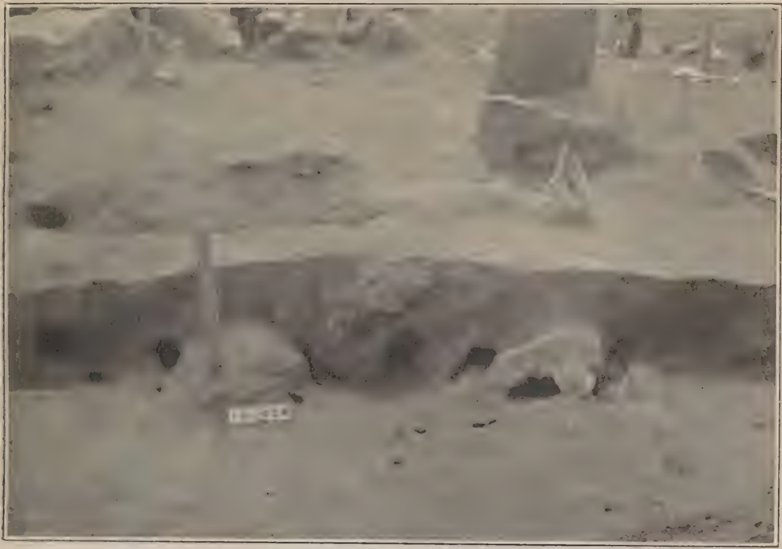


Topping of Mound No. 1, Site No. 10.

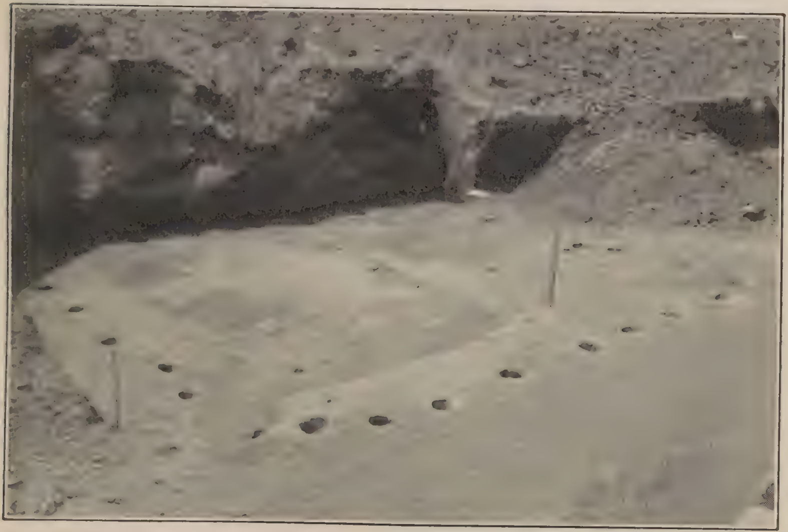
a. Gorget, pipe, and celt in situ. Mound No. 1, Site No. 10.



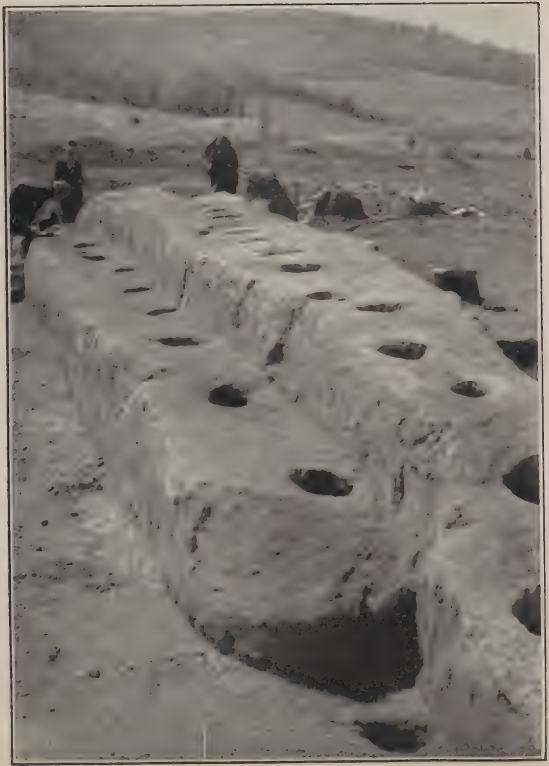
b. Sixth structure floor. Mound No. 1, Site No. 10.



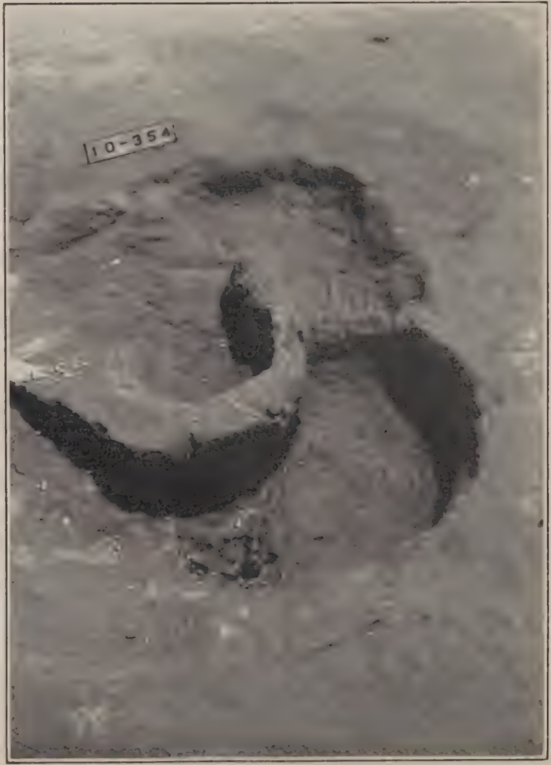
a. Horizontal log molds. Feature No. 19, Mound No. 1, Site No. 10.



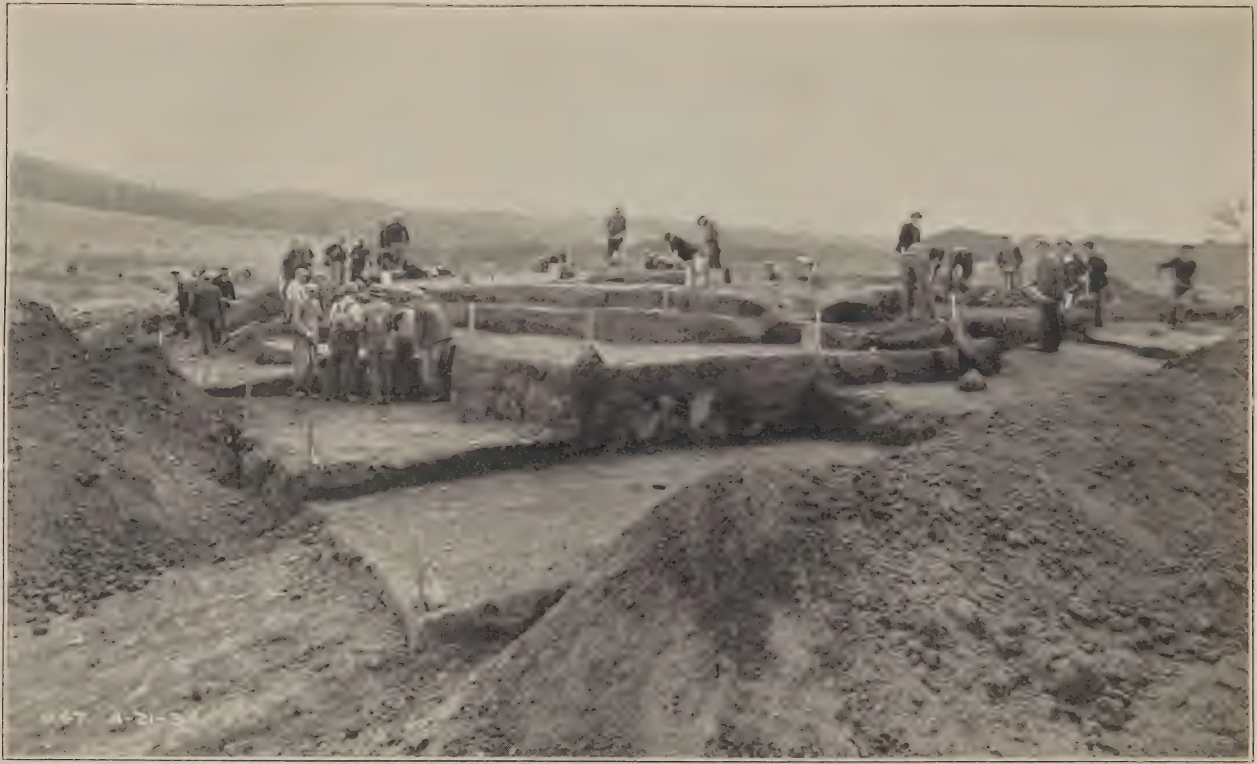
b. Post-mold pattern. Feature No. 22, Mound No. 1, Site No. 10.



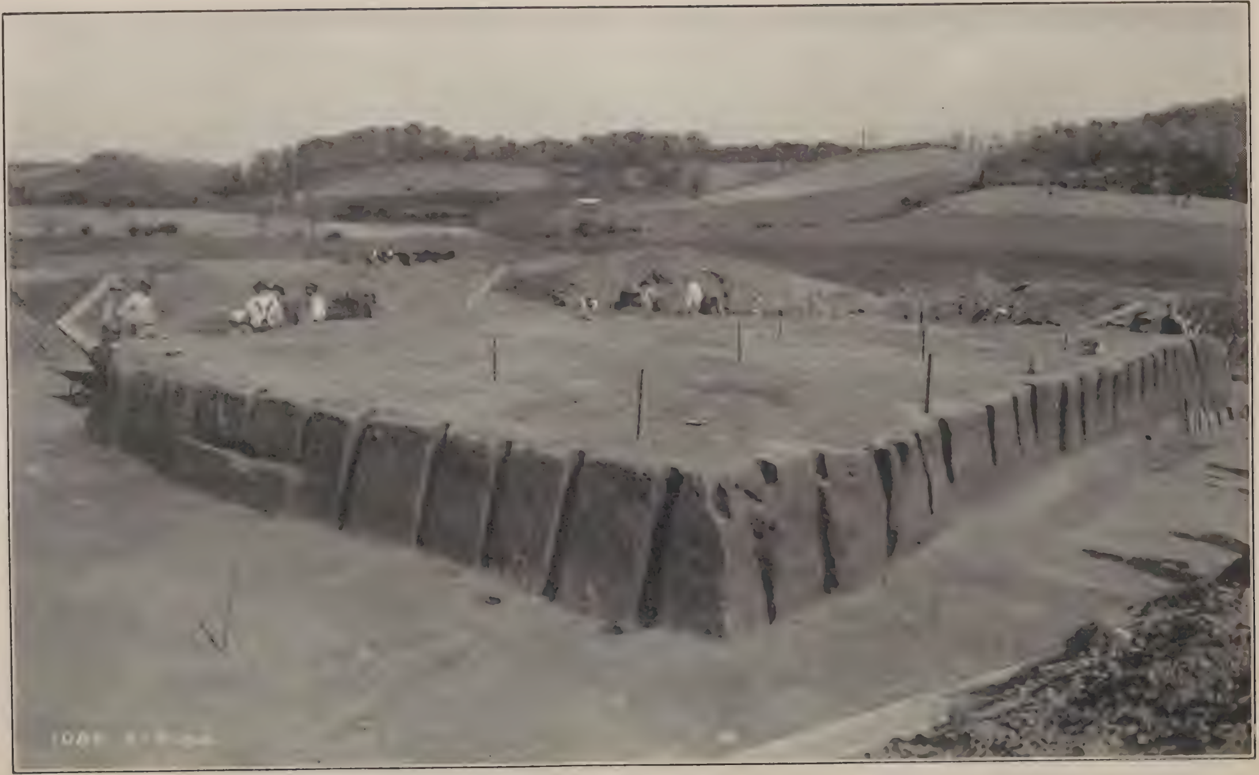
a. Floor levels and molds of the seventh and eighth structures. Mound No. 1, Feature No. 20, Site No. 10.



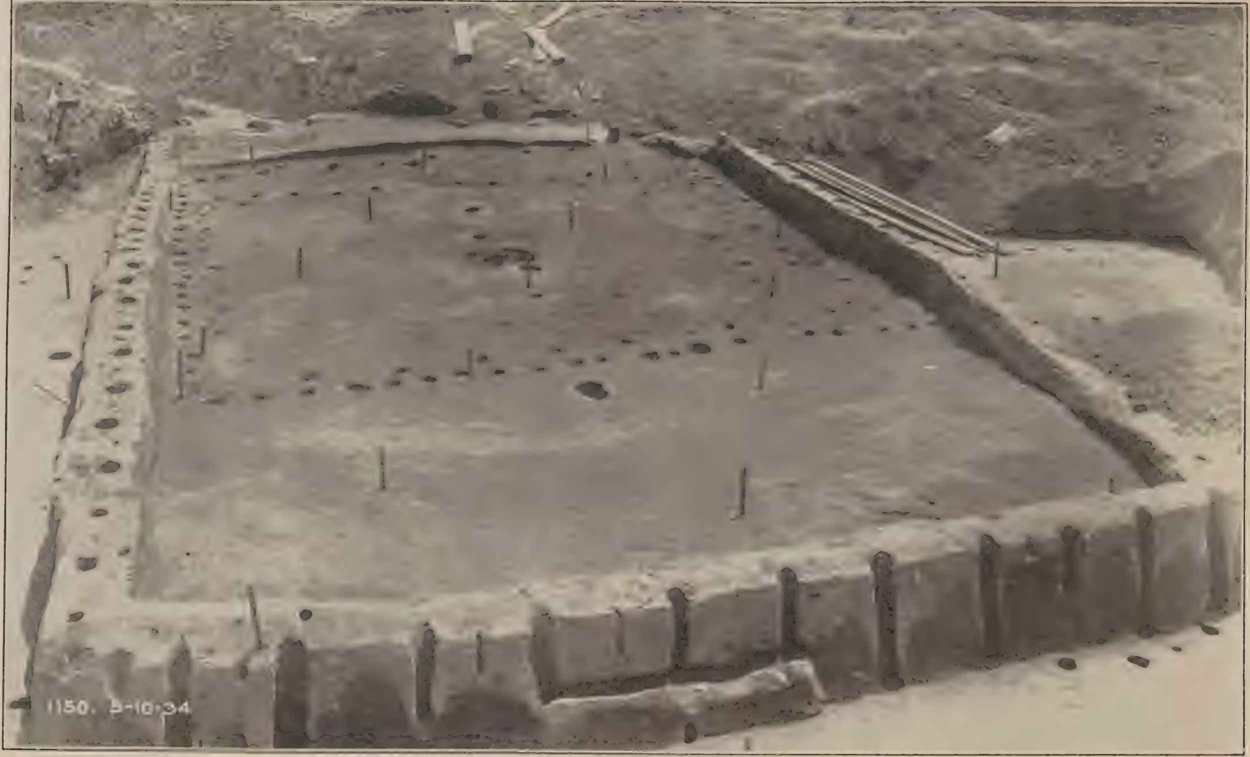
b. Two baked fire pits, one in the other. Fifth structure. Mound No. 1, Site No. 10.



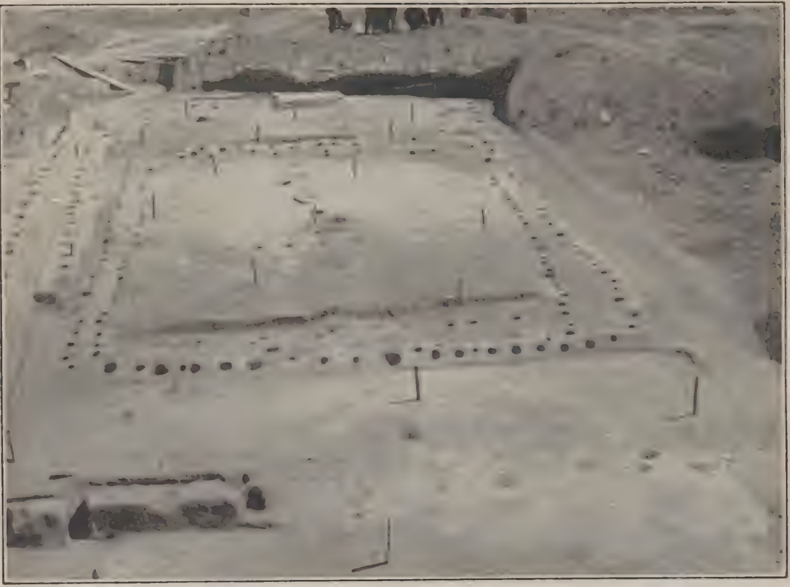
Topping mound in blocks. Mound No. 1, Site No. 10.



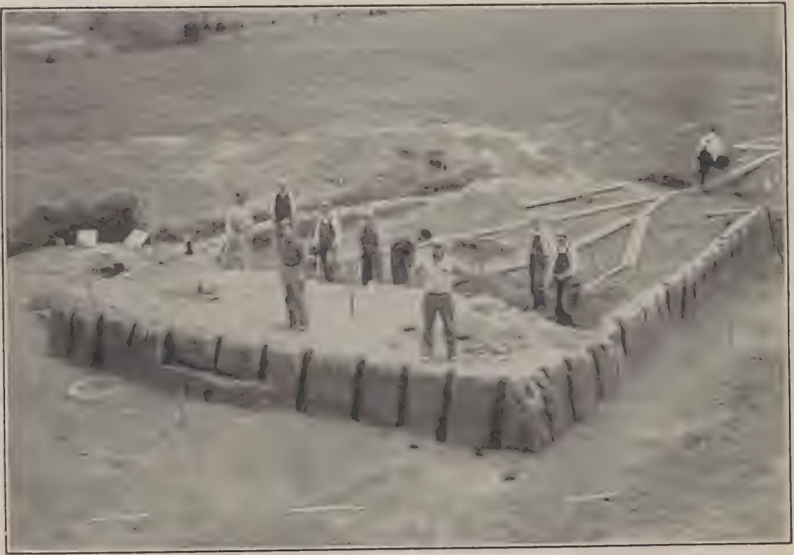
Longitudinal section of vertical and horizontal molds. (Note how posts lean inward.) Mound No. 1, Site No. 10.



Fifth, sixth, and seventh structure patterns. Mound No. 1, Site No. 10.



a. Fourth floor level. Mound No. 1, Site No. 10.

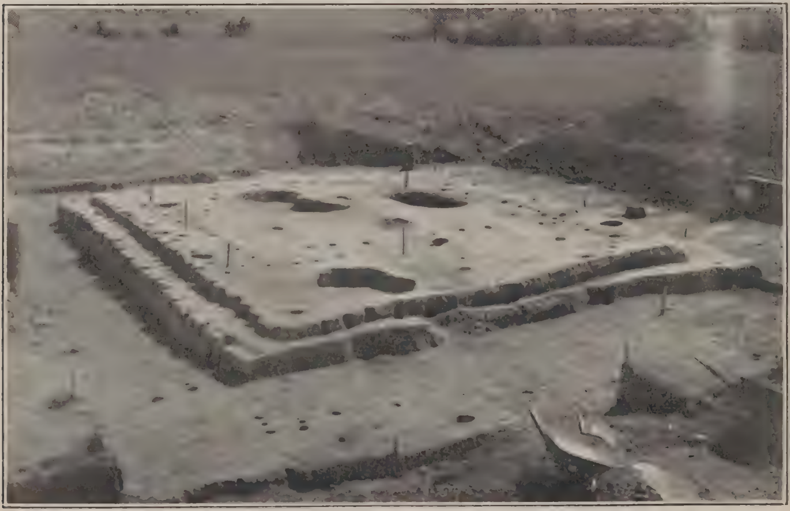


b. Method of cleaning interior floors. Mound No. 1, Site No. 10.

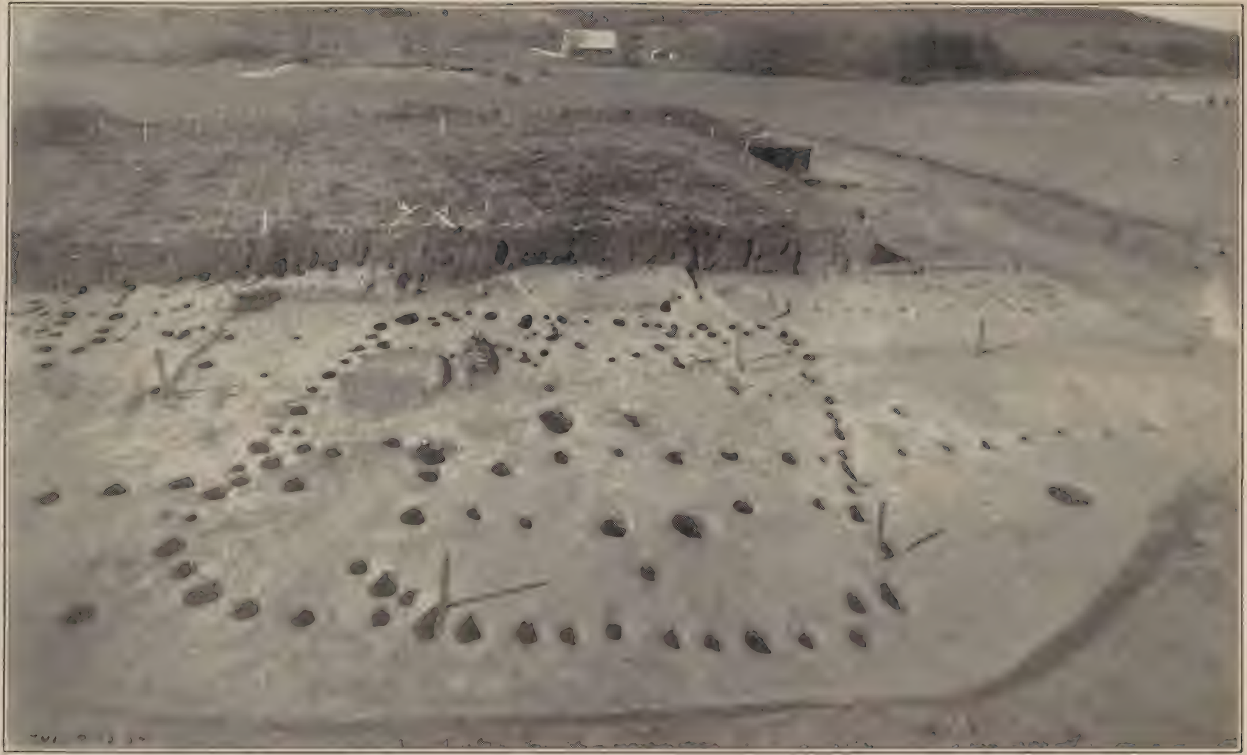
a. Horizontal molds under seventh structure floor. Mound No. 1, Site No. 10.

b. Relation of fourth, fifth, sixth, and seventh structures. Feature No. 38, Mound No. 1, Site No. 10.

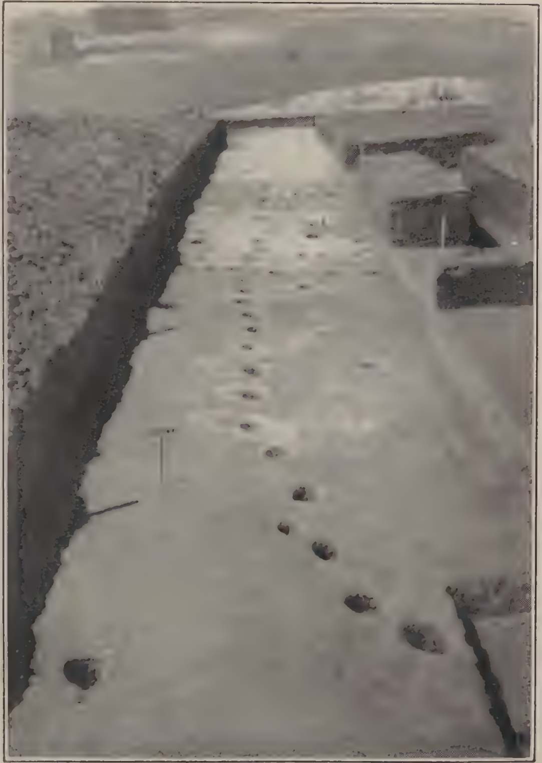
a. Opening Mound No. 2, Site No. 10. (Note Mound No. 1 in right distance.)



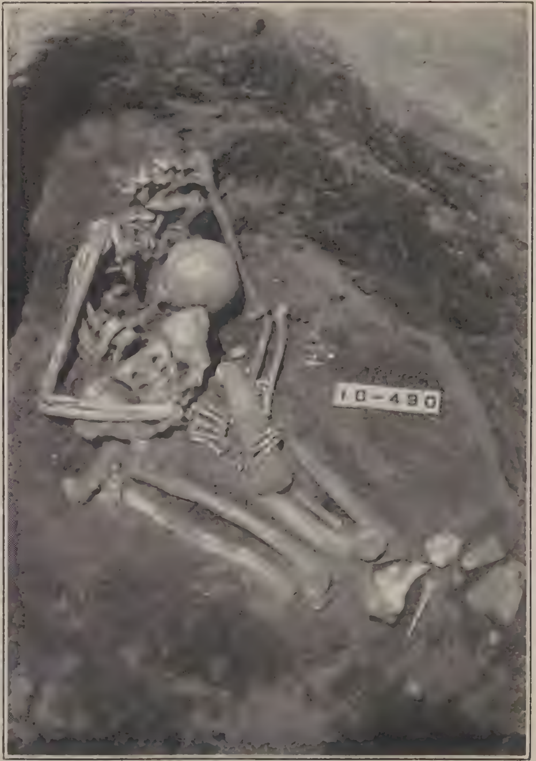
b. Floor-level post-mold pattern. Feature No. 16, Mound No. 2, Site No. 10.



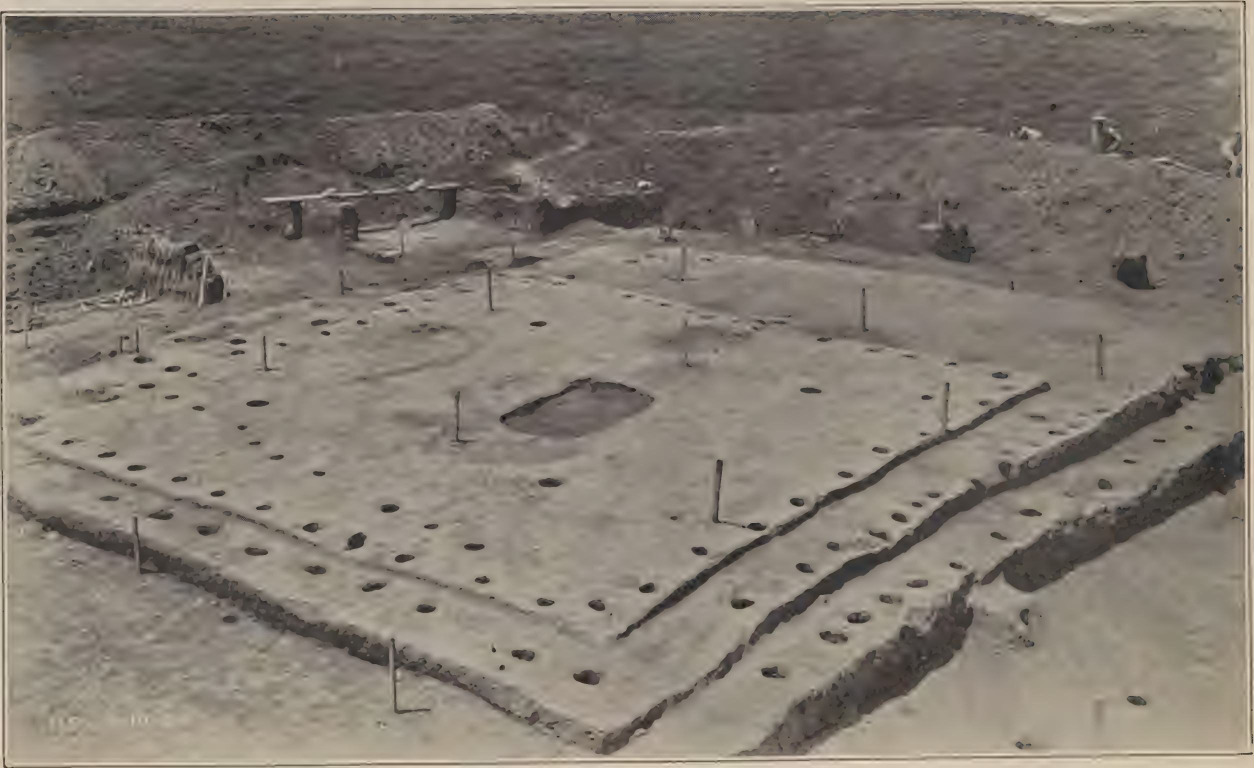
Post-mold pattern. Feature No. 9, Mound No. 2, Site No. 10.



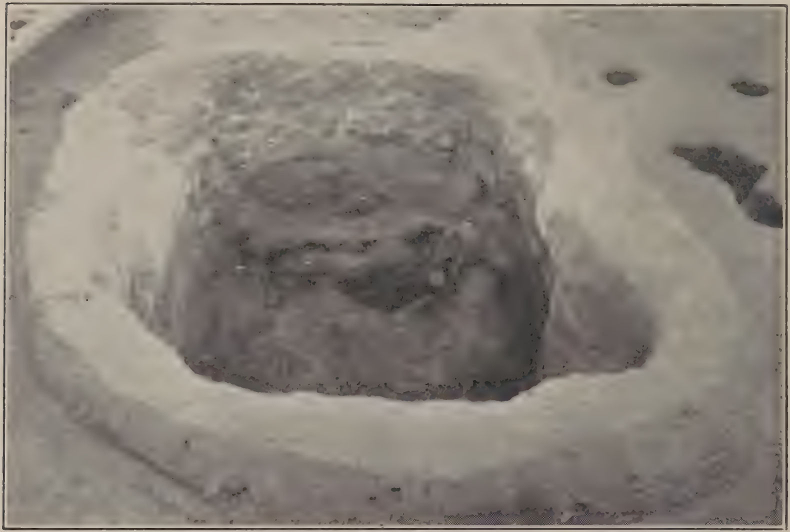
a. Line of large post molds 52 feet long. Mound No. 2, Site No. 10.



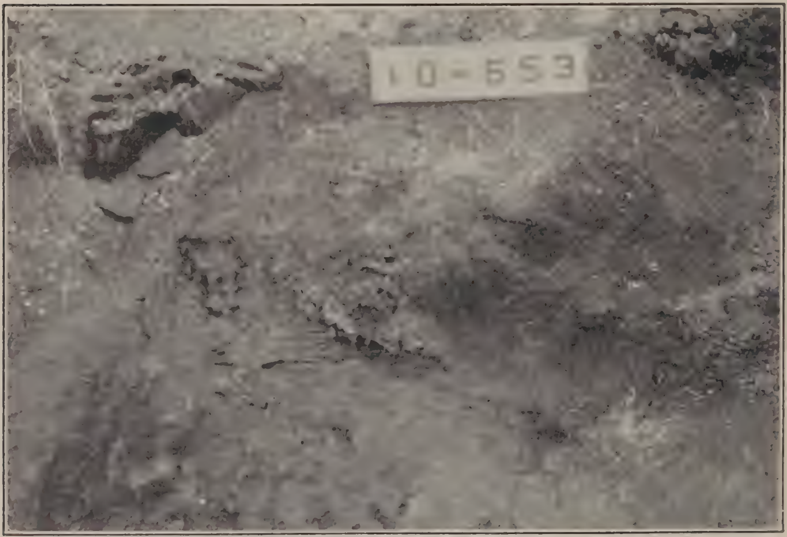
b Burial No. 2, Mound No. 2, Site No. 10. Body was placed in pit in sitting posture.



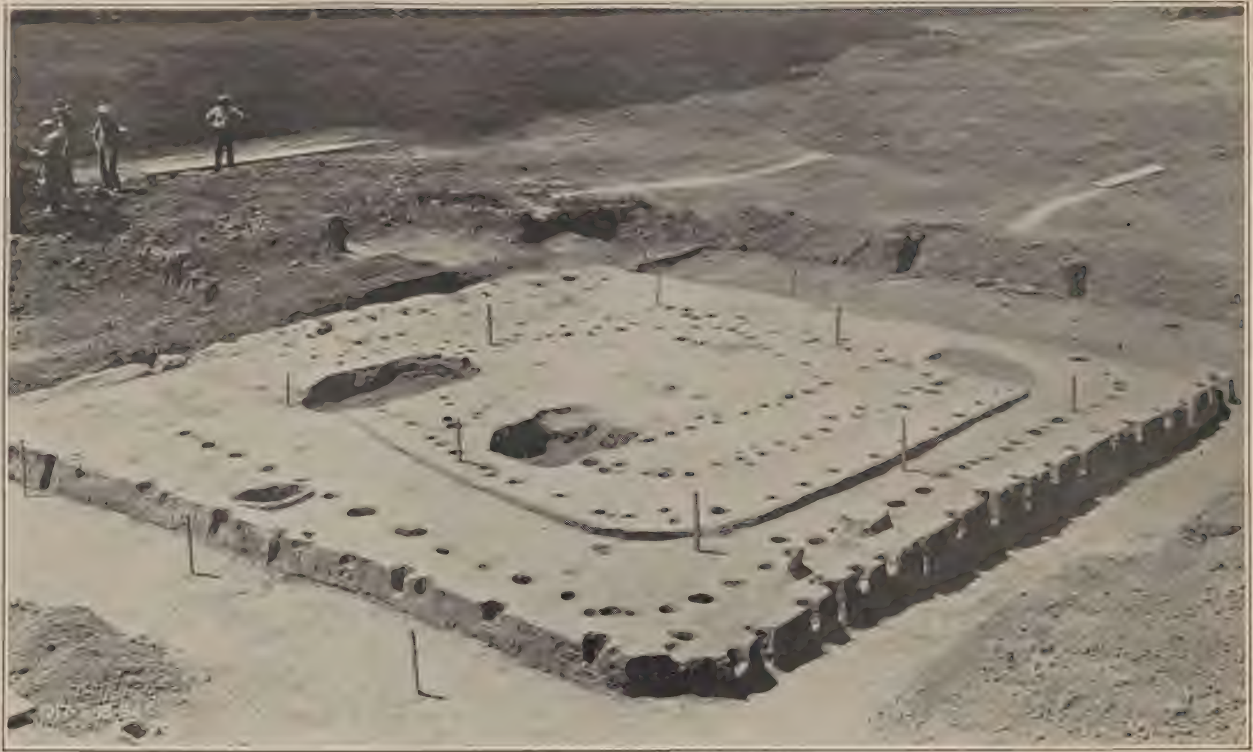
Three rectangular post-mold patterns—the inner Feature No. 12, Mound No. 2, Site No. 10. (Note four central molds which are probably roof supports.)



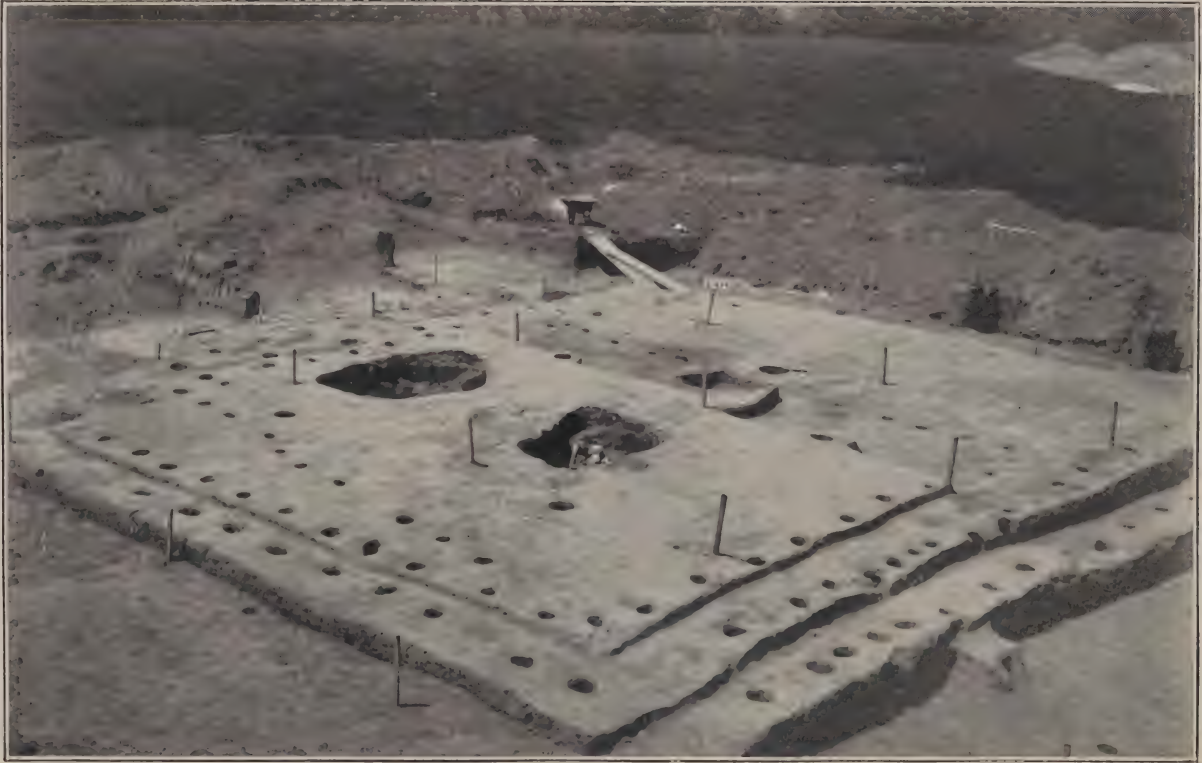
a. Pit. Feature No. 14, Mound No. 2, Site No. 10. (Note charred logs in wall.)



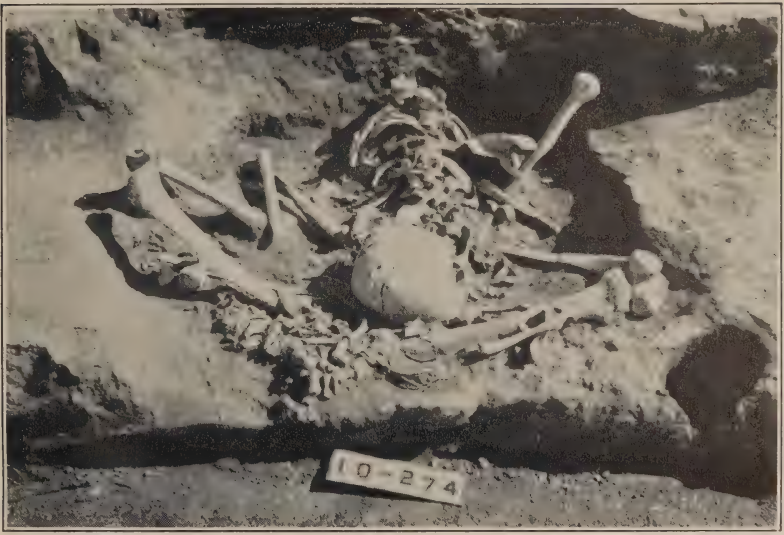
b. Charred logs and matting in bottom of pit. Feature No. 14, Mound No. 2, Site No. 10.



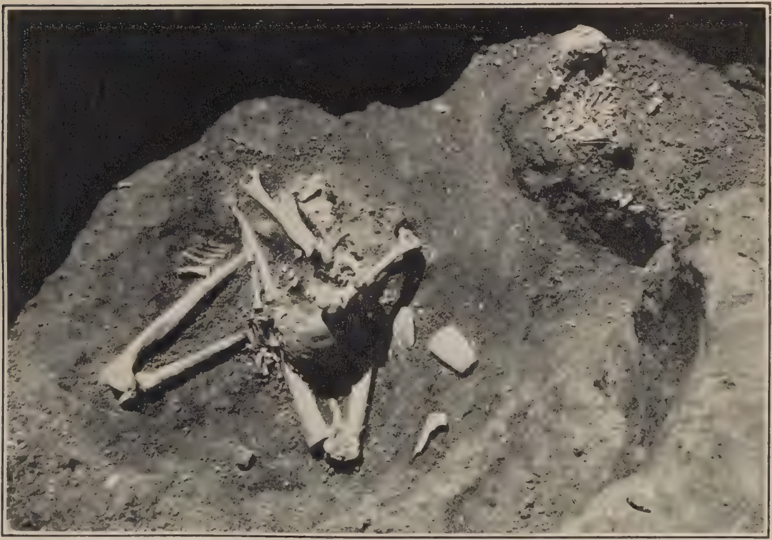
Third mold pattern. Feature No. 17, Mound No. 2, Site No. 10.



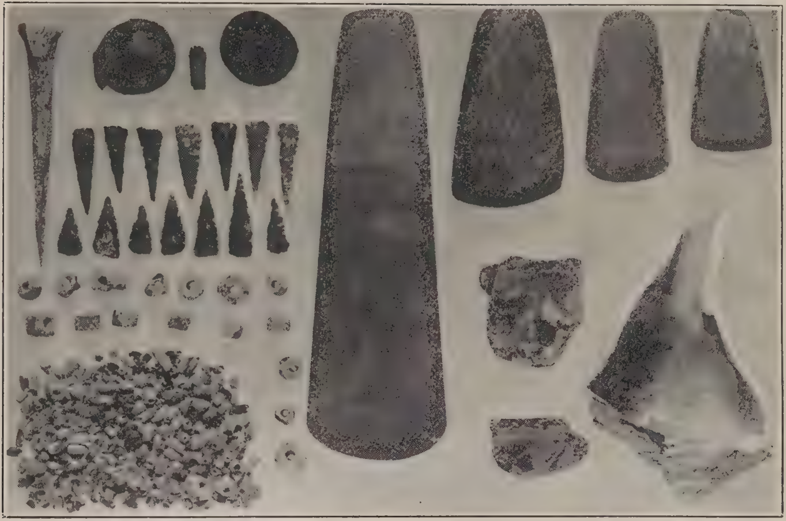
Pit opened in floor, showing Burial No. 2, Mound No. 2, Site No. 10.



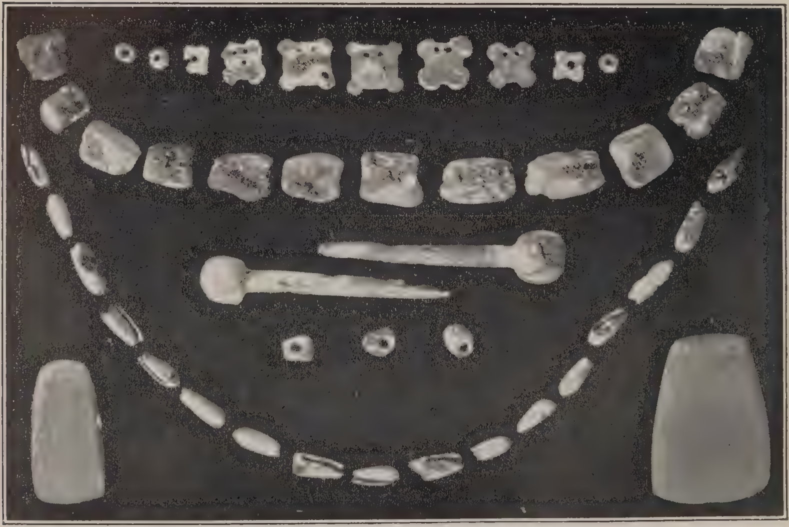
a. Burial No. 3, Mound No. 2, Site No. 10. (Note burial of dog at feet of skeleton.)



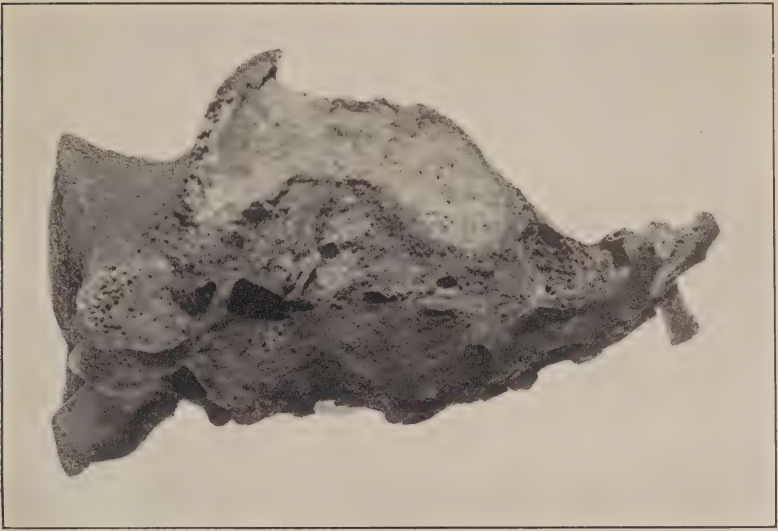
b. Burial No. 5, Mound No. 2, Site No. 10. (Note dog skeleton nearby.)



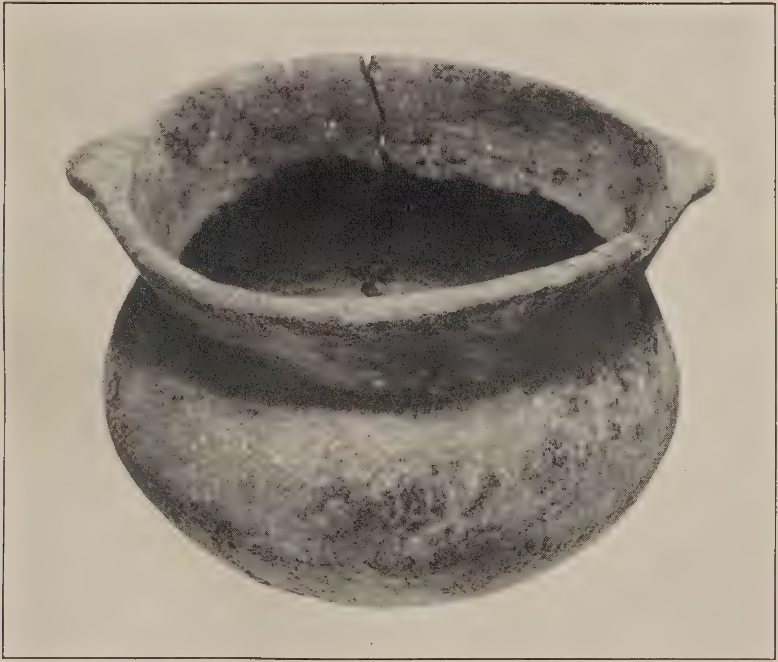
a. Artifacts from Burial No. 2, Mound No. 2, Site No. 10.



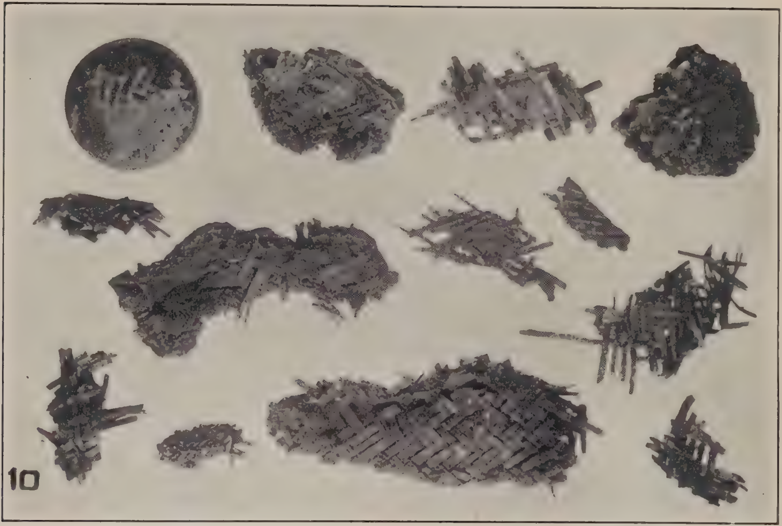
b. Artifacts from Burial No. 1 and Burial No. 4, Mound No. 2, Site No. 10.



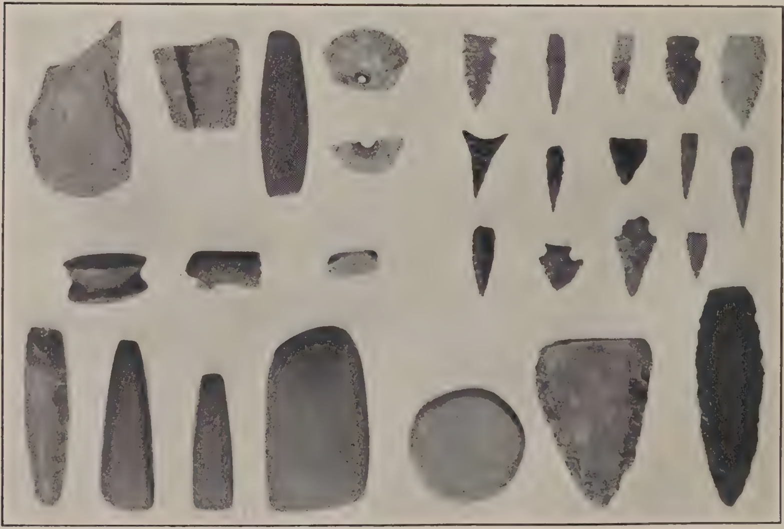
a. Sacrum with imbedded flint point. Skeleton No. 4, Mound No. 2, Site No. 10.



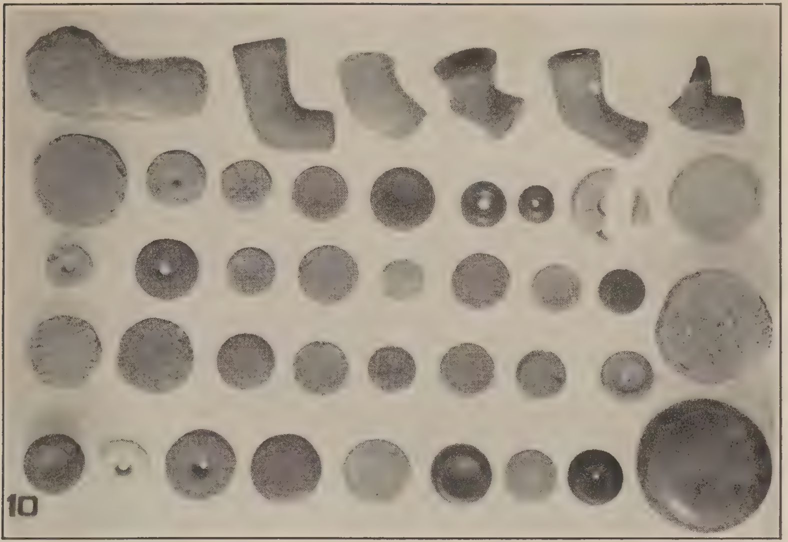
b. A small jar with two lip lugs, the only perfect vessel from Site No. 10.



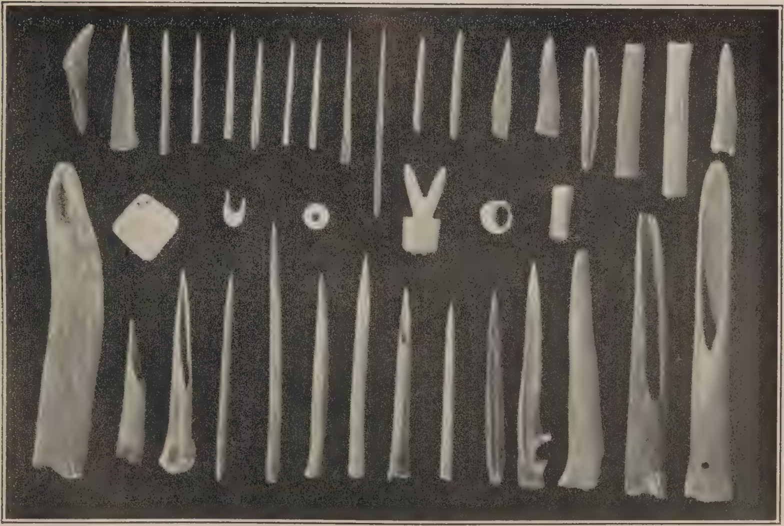
a. Part of cache of charred matting bag and contents. Feature No. 14, Mound No. 2, Site No. 10.



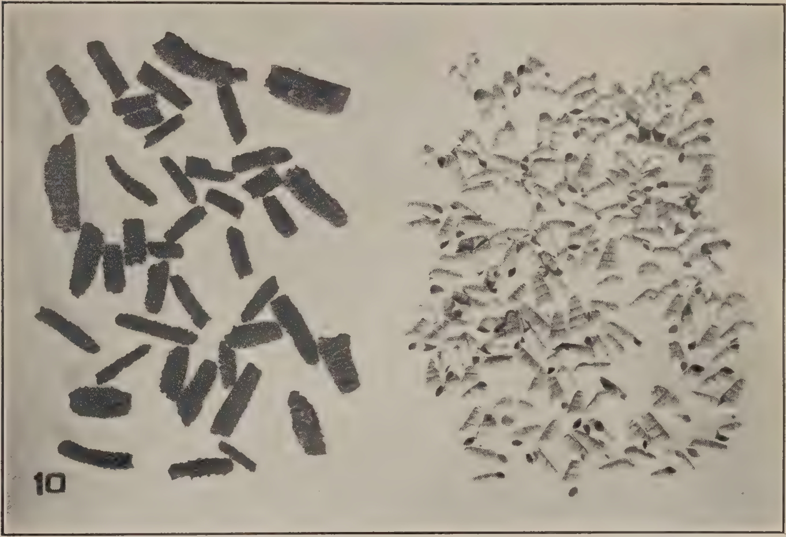
b. Stone artifacts from general digging. Site No. 10.



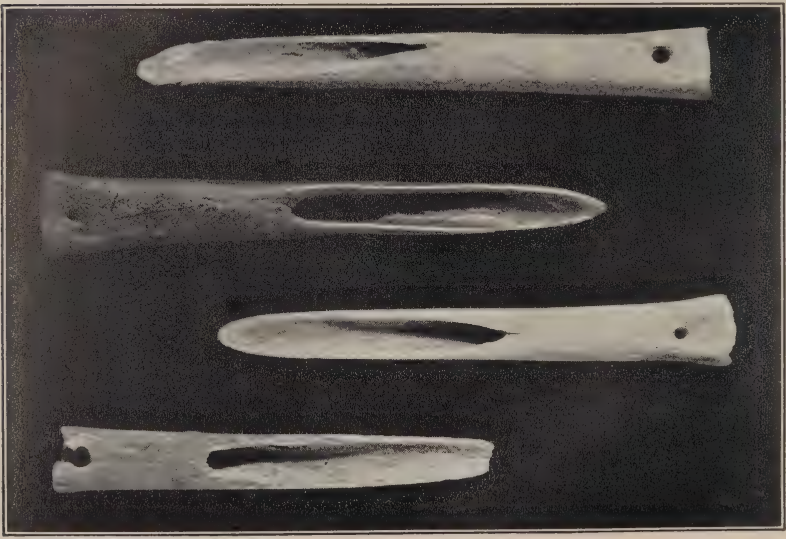
a. Pipes and disks from Site No. 10.



b. Bone implements. Site No. 10.



a. Partial contents of caches of periwinkle shells and corncobs. Mound No. 2, Site No. 10.



b. Bone spear points. Mound No. 2, Site No. 10.

remarkable similarity in burial customs, the possible significance of which will be discussed in a later chapter. However, it is important to notice in this connection that these so-called Creek burial customs which seem to so closely resemble the practices at Site No. 10, were reported by these observers as Creek customs after 1770. It does not appear from any known records that those burial customs were attributed to the Creeks prior to the last quarter of the eighteenth century.

SITE No. 11.—WALTERS FARM VILLAGE

The C. J. Walters farm was on the south side of Clinch River in Union County, Tenn. It was 5 miles below Walker Bridge and approximately 43 miles from Norris Dam. The site was on a flat-topped hill which rose some 135 feet above Clinch River. The hill was almost entirely encompassed by a northward-flexed meander of the Clinch River. In the apex of this meander lies Busk Island. About 1,300 feet east of the site is a deep valley in which there is an intermittent stream. The highest portion of the hill will be slightly above the high-water line of Norris Lake, but the farm and a portion of the village site which was investigated will go under water.

The soil averaged 20 inches over the entire site. It had been washed from the apex of the hill, leaving there a covering not over 6 inches deep. On the east, in the small drainage valley, the soil was often 3 feet deep and contained much midden material. The hardpan was generally of a heavy red clay, but sand areas were occasionally encountered. Outcrops of chert and flint in Knox dolomite were found not 2 miles distant from the site.

The area investigated, a prehistoric village site, was situated in a field which had been plowed for a period of 50 years or more. A preliminary investigation by trenching was made to determine what area, if any, was worthy of investigation. The area to be investigated was staked off and trenching was begun on the west side. Trenches were put down to the hardpan, keeping a clean floor and a vertical wall every 10 feet in the direction of the advance. There were no mounds or other earthworks of large size on the site, but an abundance of evidence of a prehistoric village was found—midden material on the surface and post-mold patterns of rectangular structures in the hardpan. Since no one of the finds here was outstanding or distinctive, the features will be described in the order in which they were found. Their location is shown on a plat of the site which is presented in figures 48 and 49. Figure 48 shows the northern end of the excavated area, while figure 49 shows the southern end. The area was staked in 20-foot sections, the northeast corner being the 0.0 stake. After the original survey was completed it was found desirable to extend the area to be investigated northwest of the zero line for 60 feet. This new area was charted from a reference point designated N–0.0.

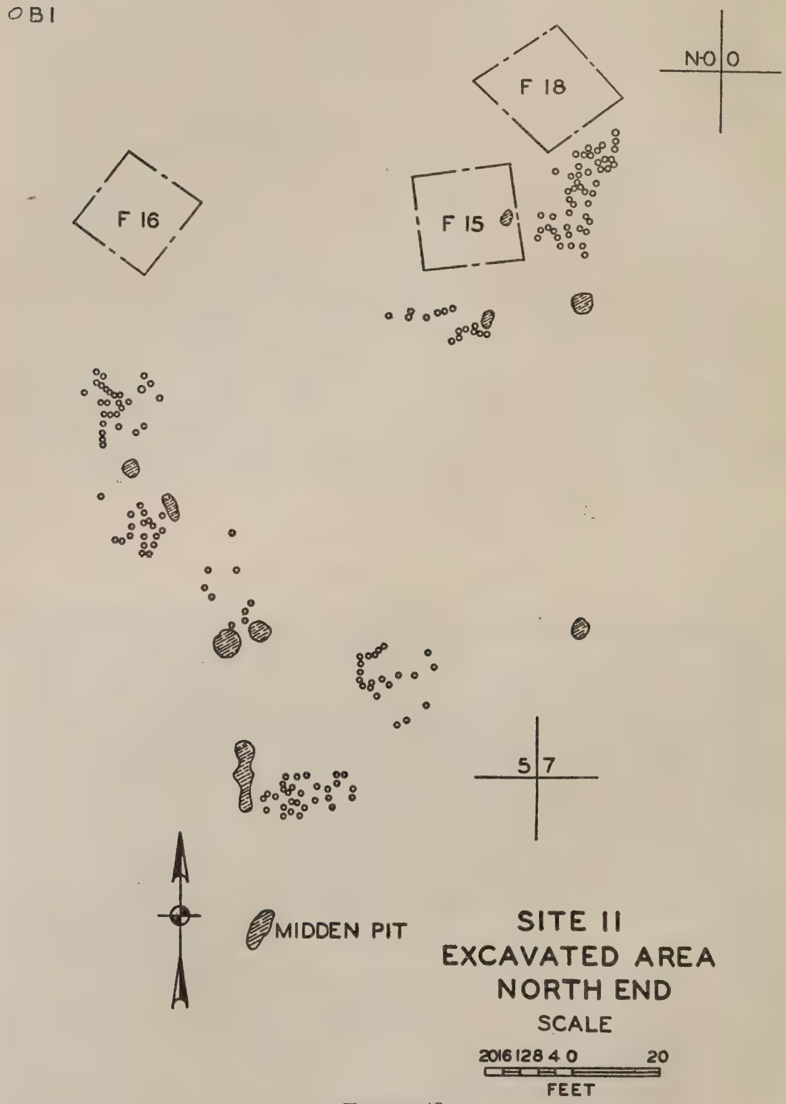

O B1
N-0 0
F 18
F 16
F 15
5 7
MIDDEN PIT
SITE 11
EXCAVATED AREA
NORTH END
SCALE
20 16 12 8 4 0 20
FEET

FIGURE 48.

Feature No. 1.—This was a large gray pottery vessel, 18 inches in diameter and 18 inches deep, which was completely filled with earth. It was found covered by the remnant of a larger but more

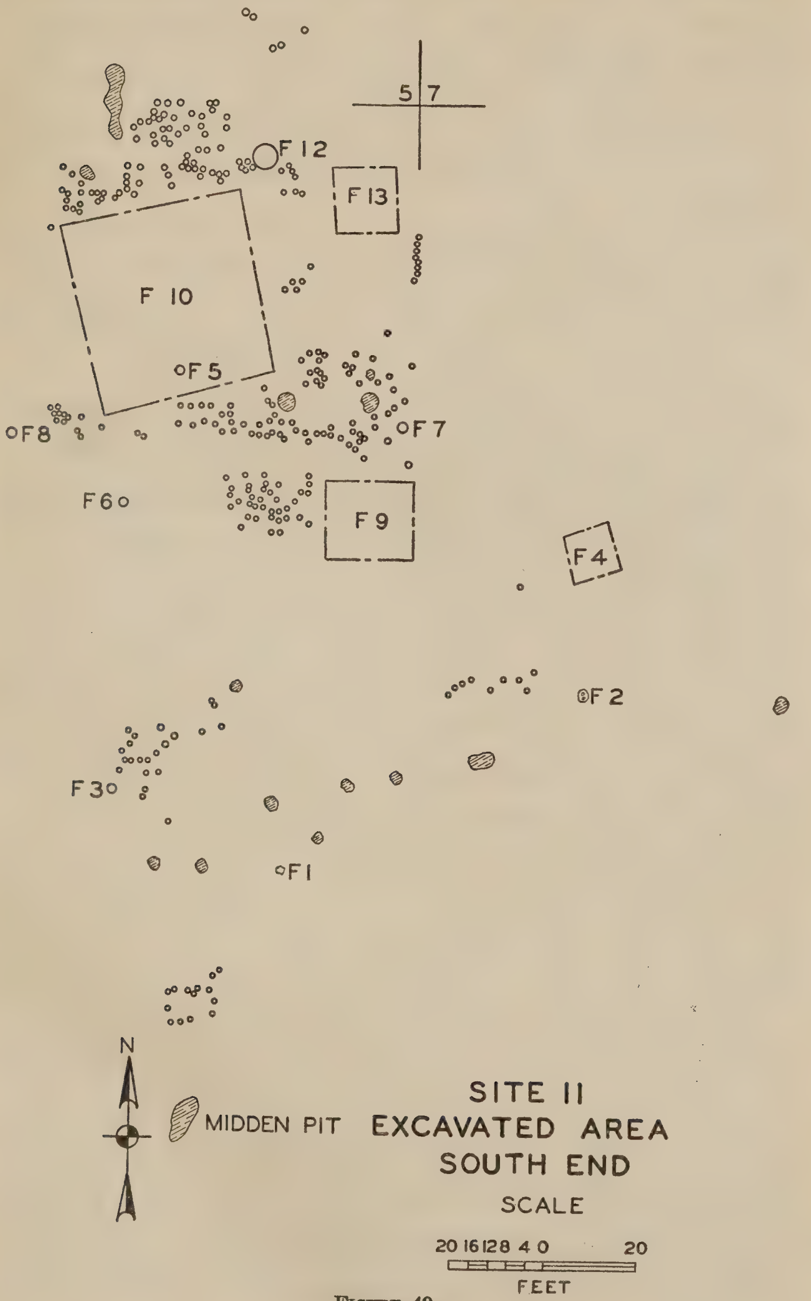

5
7
F 12
F 13
F 10
F 5
F 8
F 7
F 6
F 9
F 4
F 2
F 3
F 1
N
MIDDEN PIT
SITE 11
EXCAVATED AREA
SOUTH END
SCALE
20 16 12 8 4 0
20
FEET

FIGURE 49.

shallow vessel. The covering vessel was three-fourths inch thick and had a rim 1 inch thick. It was a basin-shaped textile vessel of a type often called a "salt pan." It was only about 8 inches below the surface, and both vessels were badly cracked when found.

Feature No. 2.—Two pots, broken but nearly complete, were found and are shown in plate 69, *a*. The larger pot was inverted, with the bottom broken out. The smaller pot lay beside it, and one side had been broken.

Feature No. 3.—This was a circular fire pit, near stake 12.10 (pl. 69, *b*), and was made of hard-baked red clay. It was found to have a diameter of 17 inches and a depth of 6 inches. This fireplace was regularly shaped. Its walls were 2 inches thick. It was filled with soil containing mussel shells and many bone fragments.

Feature No. 4.—On the hardpan, about 14 inches below the surface of the field, a burned structure was found (pl. 70, *a*). This seemed to indicate that a roof of logs covered with split cane and grass had been present on the site at some time. The form of the building was difficult to determine, but the large logs of the fallen building seem to radiate from a center, suggesting a leaning together of posts at the top, wigwam fashion. When the charred remains of the logs and thatch were cleared away a post-mold pattern was revealed which was about 11 feet wide and 12 feet long. Within this pattern of molds there was a well-prepared floor of hard clay which contained a number of post molds somewhat larger in diameter than the wall molds, a small depression, a fireplace, and two stones.

The depression, which was 13 inches in diameter, had smooth walls which sloped gently downward to a depth of 4 inches at the center. The fireplace was an area on the floor, blackened and burned by fire action, which contained three sandstone boulders, as shown in plate 71. The stone (*i*) was a sandstone which lay on top of the burned structure, while the stone (*j*) was a limestone which lay upon the floor. The location of the structure is shown on the plat, figure 49.

On the floor of the structure were three bowls, two small pots, one large pot badly broken, one drilled mussel shell, a stone quoit, a burned deer antler, and a crude implement. About 8 inches above the structure floor, and within this area, a brass ring 1 inch in diameter was found. This ring seemed to have been cut by a hacksaw from the end of a brass pipe. Its seeming association here may be wholly accidental. Plate 71 shows also the vessels in situ. The condition of this structure, thought to be a dwelling, with artifacts and pottery scattered about the floor, would seem to suggest that this building was hastily deserted by its occupants without the complete removal of their household property. Whether the burning of the structure was accidental or intentional could not be determined.

Feature No. 5.—This was an area of bright-red clay surrounded by yellow clay. The area was 22 inches in diameter and had a small depression in the center.

Feature No. 6.—This was a small depression filled with burned cobs and fragments of charcoal, near stake 9.10.

Feature No. 7.—A small pit 10 inches in diameter filled with gastropod and mussel shells, evidently a cache of shells, near stake 8.7.

Feature No. 8.—This was a fireplace. It was nearly square, 17 inches on a side, with rounded corners sunk into the yellow clay near stake 8.11. The sides and bottom of the pit were baked a deep red. The pit was filled with fine ashes.

Feature No. 9.—A rectangular area 20 by 23 feet was surrounded by large post molds. The general outline of the structure was distinct, but no well-defined rows of molds were apparent. It appeared that several structures of approximately the same size and orientation had been constructed on this exact spot. The walls of these different structures so nearly coincided that individual molds of later buildings cut into earlier molds, so that the present molds are elongated ovals in cross section, as shown in plate 72. Certainly two and perhaps three structures have been located here, accounting for this extreme density of post molds on a relatively small area. There was no evidence of any burned structure on this floor. From the general condition it was believed that had the structure been covered with earth when it burned it would have been preserved. This would seem to point to a structure not earth-covered or else to structures on the same spot. It is to be noted that the logs used in this structure were large—8 inches or more in diameter—and that they were not set close together as in the ordinary "small-log" construction of dwellings.

Feature No. 10.—A large rectangular post-mold pattern 41 by 43 feet located as shown on the plat, figure 49. The soil covering this area was about 14 inches deep and the whole floor surface of the structure had been destroyed by cultivation. The southwest corner was deeply eroded and all the molds had been removed. The hardpan was a heavy red clay in which the molds still showed to a depth of 6 to 8 inches. The northwest corner of this structure is shown in plate 70, *b*. It is possible that this area may have been a "chunky" yard, as two discoidals were found within its boundaries.

Feature No. 11.—A storage pit about 30 inches in diameter and 33 inches deep was found sunk into the red-clay hardpan, near stake 5.8 and within the post-mold pattern Feature No. 10. A small amount of charcoal covered the bottom, which was flat. The charcoal was mostly of grass or thatch. There were no other associations and no evidence of burning.

Feature No. 12.—Ash pit. This pit was circular in form, 60 inches in diameter and 5 inches deep. It was filled with ashes which were also heaped up into an additional depth of 6 inches, making a total of 11 inches. Walls of the pit sloped gradually to the center. This pit was near stake 5.8, as shown in figure 49.

Feature No. 13.—A post-mold pattern which indicated a structure 16 feet wide and 19 feet long was found. The post molds were so numerous that the definition of the structure was rendered difficult. The post-mold pattern is shown in plate 73, *a*. In the center of the structure was a fireplace 18 inches in diameter and 8 inches deep, with nearly vertical walls. This fireplace was filled with ashes. When the ashes were removed an irregular pit 22 inches deep was found just northwest of the fireplace. A well-hardened floor was found surrounding the fireplace. Several molds near this area were 12 inches deep. Other post molds averaged from 6 to 8 inches in depth. A large hole in the northeast corner was filled with ashes, and numerous holes partly filled with mussel and gastropod shells were discovered.

Feature No. 14.—Inside of the structure, designated as Feature No. 15, was a fire pit. It was nearly square, 24 inches on the side, with rounded corners, and 8 inches deep.

Feature No. 15.—This was a rectangular pattern of post molds 25 feet wide and 27 feet long, as shown in plate 74, *a*. The floor here was not well defined but evidently had been disturbed and penetrated by the plow. A multiplicity of post molds made the definition of the boundaries of the structure pattern difficult.

Feature No. 16.—Near stake N–1.6 was a structure pattern, as shown in plate 74, *b*. The preservation of this post-mold pattern was very poor, as the floor had been cut by the plow. There was a hard-burned sandy floor on heavy red clay. This floor had a few isolated patches of burned split cane on it. No fireplace was observed. The northwest corner was cut so deeply by the plow that the post-mold pattern had been entirely removed.

Feature No. 17.—This was a fireplace on the floor of Feature No. 18. It consisted of three basins in an approximately straight row, 52 inches over all. The end basins were 14 and 16 inches, respectively, in diameter, with depths of 3 inches and with sloping walls. The center basin was 15 inches in diameter and 12 inches deep, with straight vertical walls.

Feature No. 18.—Was a post-mold pattern approximately 21 by 23 feet. The heavy red clay floor was nowhere preserved. It was badly cut up by the plow and by numerous roots from nearby trees, but Feature No. 17 was in a good state of preservation. Present remains of the structure pattern are shown in plate 73, *b*.

In the extreme northeast corner of the area excavated a single burial was encountered. It was that of a child. The preservation of the bone was good but the skull was crushed. The body had been fully flexed and had been placed in a pit 11 inches by 21 inches, 15 inches below the surface of the hardpan. The body was laid on the right side with head to the northeast. The pit was filled with soil mixed with ashes, which was in marked contrast to the red clay hardpan in which the pit was dug. There were no artifacts present.

As the result of the large amount of general excavation on this site a considerable quantity of material was recovered.

POTTERY

This village site yielded a large amount of potsherds in a good state of preservation. They exhibit a wide range of form. The pottery was all taken from general trenching in the village; none was associated with any burials.

Since the village midden in some places was deeper than the plow line, many large sherds were found and in some cases nearly all of the component parts of large vessels were found in close association. Many of these groups of sherds were sufficiently complete to make restoration of the vessels possible. From the circumstances of the findings it was believed that a portion of this pottery was representative of types in use at the time the village was abandoned. Drawing restorations of selected sherds are shown in figures 50 to 55, inclusive.

Without attempting a detailed classification of this large body of sherds, it is at once apparent that certain types were definitely abundant on this site. Cord-paddle-marked and textile-impressed sherds were about equally abundant here. Plate 75, *a*, illustrates the type of cord-marked ware. The shell content is coarse, as shown in the upper left-hand of plate 75, *a*, and constitutes from 25 to 60 percent of the total. The variation in surface finish is due to difference in size of cord and variation in wrapping of cord on the paddle. It occassionally happened that the cord impression was smoothed over while the vessel was still plastic. The majority of these sherds indicate large vessels, many of them as large as 16 inches in diameter.

Two types of distinctive rim decoration were definitely associated with cord-paddled ware on this site. One of these consists of regular flutings, as shown in plate 76, *a*. Another rim modification of cord-paddled ware is shown in plate 76, *b*. This consists of the rim being elevated and drawn out to a point. There was a definite tendency to render the mouth of the vessel square, leaving four elevated points. Under each a lug was situated. These were either round or flat. If flattened, they were either horizontal or vertical, as shown.

Besides these lugs occurring under pointed rims, there were large, flat lugs placed horizontally on or below the straight rim, as well as round lugs similarly situated on cord-paddled pottery, as shown in plate 77, *a*.

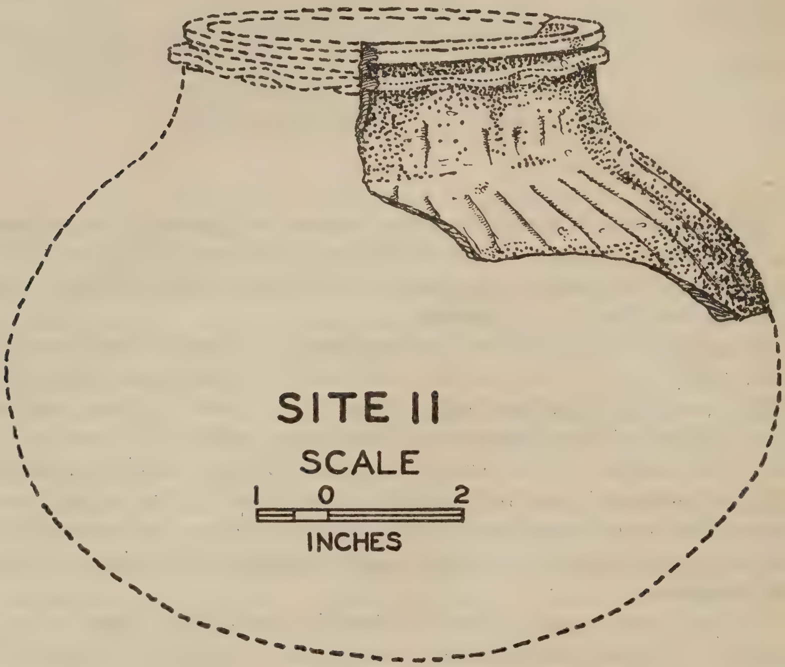


FIGURE 50.—Drawing restoration of vessel.

Many small and medium sized globular vessels of cord-paddled ware had nearly vertical rims decorated with true handles. Their handles were of two types. The round handle which occasionally extended above the rim is shown in plate 77, *b*. The strap handle, of the type shown in plate 78, *a*, sometimes terminated below the rim. The ratio of occurrence of these types of handles on this site was 42 strap to 28 round handles.

Types of textile-marked sherds are shown in plate 78, *b*. This ware was generally of coarse texture, shell tempered, with heavy rims. The body of some of the vessels, however, was quite thin, being not more than 0.25 inch in thickness. The range of textiles used included the rectangular mesh and diamond mesh of various sizes. Both are twined weaves. The net weave was not found. All textile-marked sherds show diameters of vessels of 20 inches or larger with plain rims. Some of these rims have one or two lines of punctate decorations, as is shown in plate 77, *a*.

In plate 79, *a*, are shown five nearly complete vessels taken from the same dwelling site, designated as Feature No. 4 on the plat.

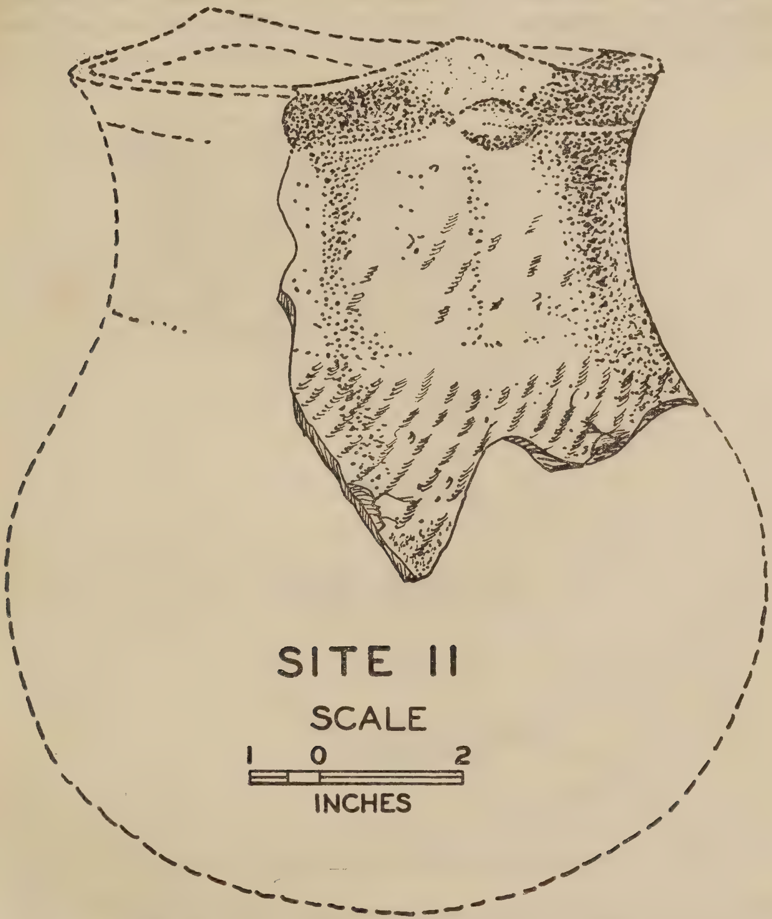


Figure 51.—Drawing restoration of large vessel.

Three of these have no surface decoration. Plain thin ware, without surface markings, was generally confined to small vessels of household use. Plate 79, *b*, shows two forms of decoration of plain surfaces. The circles in relief are pushed out from the inside and modeled on the plain surface. The incised sherds show that the decoration of this type occurred while the clay was still plastic. Neither was abundant here.

No complete vessels of zoomorphic forms were found on this site, but plate 81, *a*, shows pottery images of the human head, and bird and animal head forms, which would seem to indicate that zoomorphic pottery was made on this site. The central one of these images figured was painted, red on buff, as was also the sherd in the upper left-hand corner in plate 76, *a*. These two sherds were quite different in appearance from other material from this site, and may well be of foreign origin. The sherd of stamped ware, shown in plate 79, *b*, was shell tempered and was the only one of its kind found on this site.

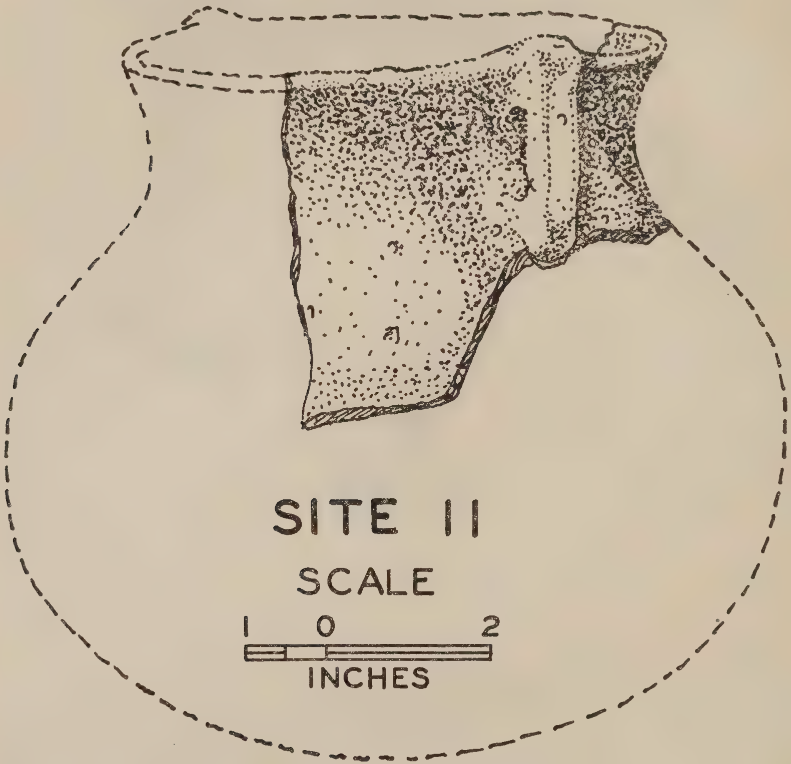


FIGURE 52.—Drawing restoration of vessel.

In plate 81, *a*, are shown two small fragmentary elbow pottery pipes. These seem to follow the general form of stone pipe shown in association with artifacts. The general digging on this site yielded stone artifacts of the forms shown in plate 81, *a*. The most abundant of all artifacts from this site were small disks commonly called gamestones, as shown in plate 81, *b*. These disks are of a variety of stones, including dolomite, quartz, sandstone, limestone, granite, and a fossiliferous marble. These vary in diameter from

3.3 inches to 0.8 inch. Associated with these disks of stone are many made from potsherds. It is to be noted that both textile-marked and cord-marked sherds were chosen for this specialization.

The textile-marked sherds generally were of such curvature as to indicate large flat pans or open bowls, commonly called "salt pans" from the assumption that such pans were used to evaporate salt water for the salt. Plate 80, *a*, shows a typical fragmentary salt pan. This "pan" was about 26 inches in diameter and 5.5 inches deep. It was made with sloping sides and a heavy rim and the cloth was applied over the whole base and sides. This photograph was taken with the vessel inverted.

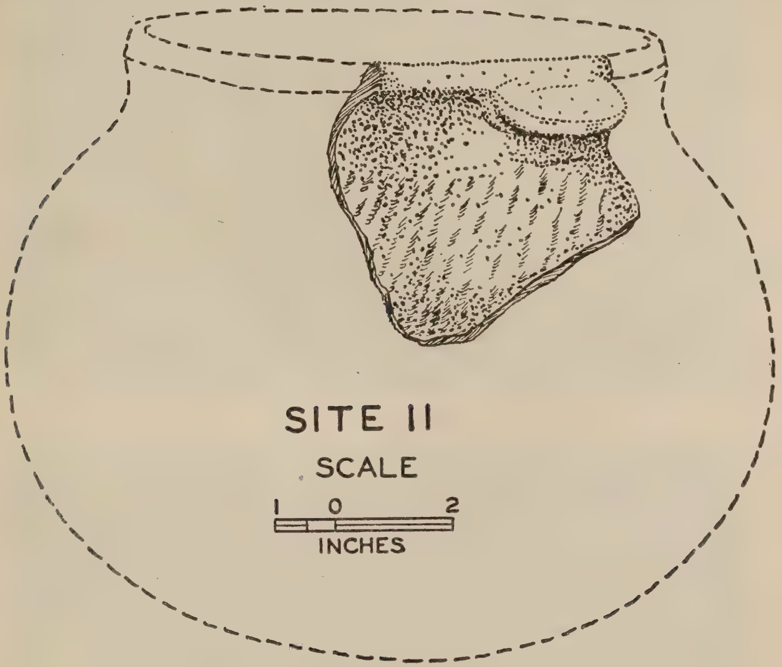


FIGURE 53.—Drawing restoration of vessel.

Of the many textile-marked sherds found on Site No. 11, all seemed to indicate "twined woven" textiles. The positive clay impression of an unusual sherd is presented in plate 80, *b*. This sherd is unusual in that while it is a twined weave it is very closely woven and presented at first glance the appearance of a simple under-and-over weave. The effect produced is quite different from the usual loosely woven twined weave of large mesh.

Bone artifacts include awls, hairpins, bear-tooth pendants, antler flakers, and other cut and worked bone implements as shown in plate 75, *b*. A number of large femora were found as shown, cut and hollowed out, and calcined at the cut end. They suggest the possibility of use as torches when filled with grease.

Conclusions

While Site No. 11 shows definite evidence of a village of fair size, yet there is no evidence of a town house. The structures here were all rectangular and of the so-called "large-log" type. They showed no evidence of having been earth covered. The amount of potsherds recovered would argue an extended occupancy, and the condition of some of the vessels would suggest that the site is not extremely old. The preservation of sherds here was so good as to definitely suggest that this site is not as old as Site No. 10, the one to which it seems most closely related.

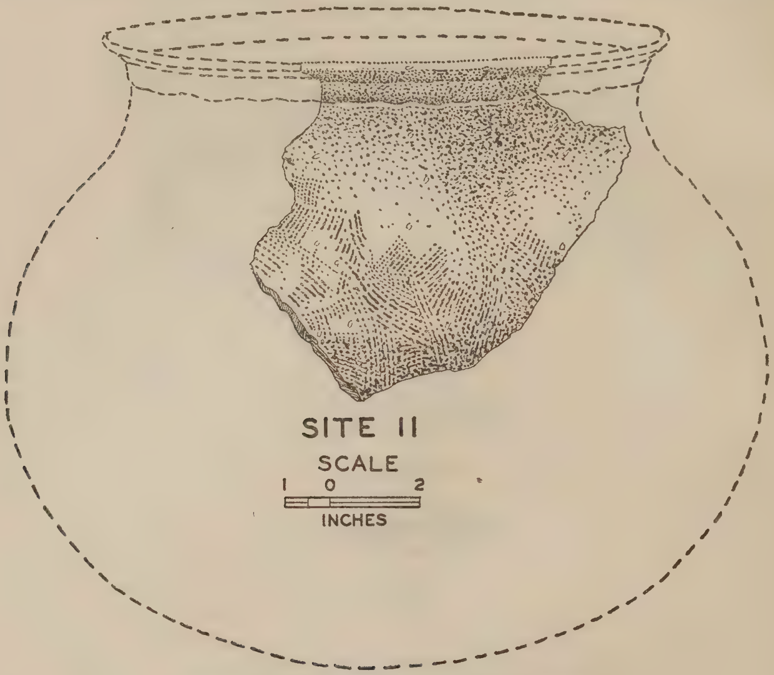
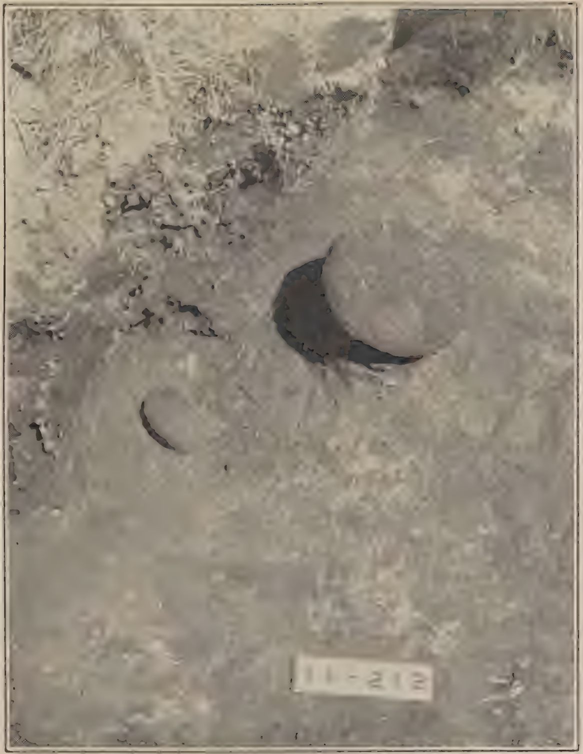


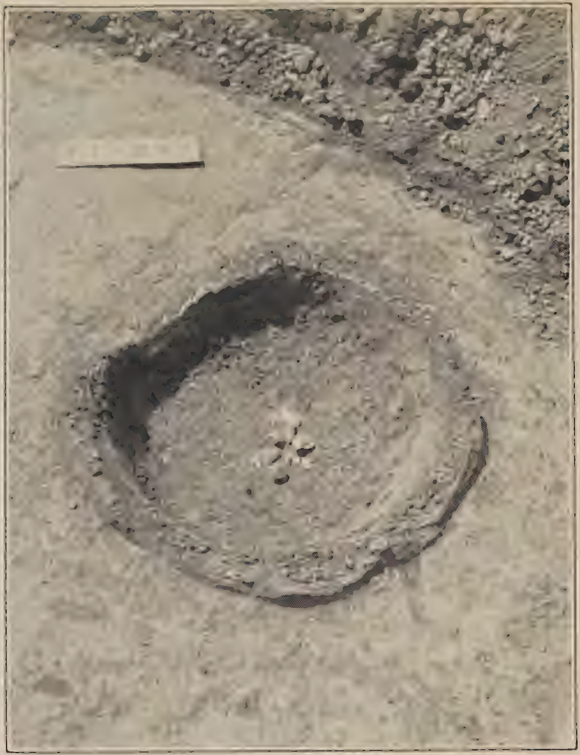
Figure 54.—Drawing restoration of vessel.

Site No. 12.—WALLACE CAVE

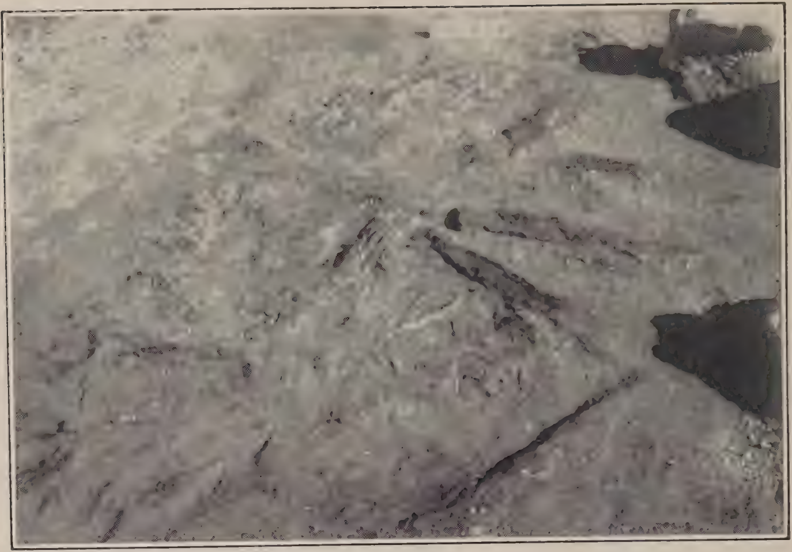
On the right-hand side of the road, between the Hatmaker Schoolhouse and the Indian Creek Bridge in Campbell County, and approximately 3 miles from the school, is a cavern situated in a tract of land owned by Judge J. H. Wallace, of Clinton.



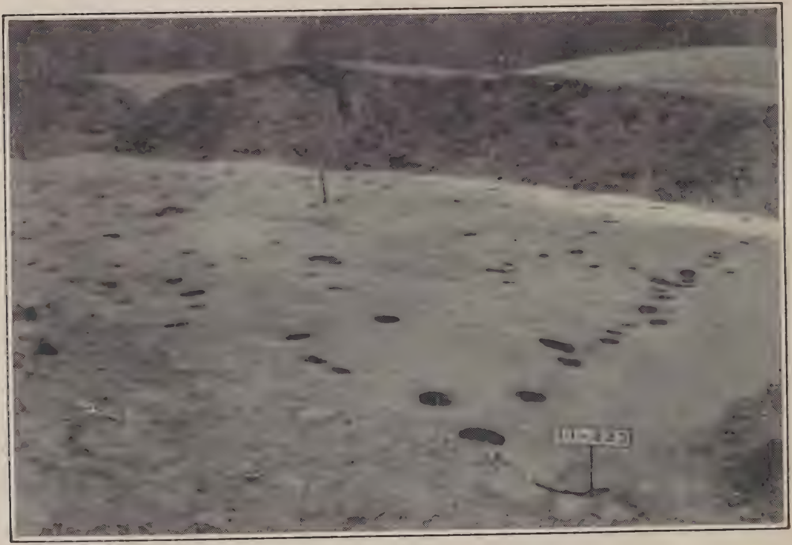
a. Two pots in situ. Feature No. 2, Site No. 11.



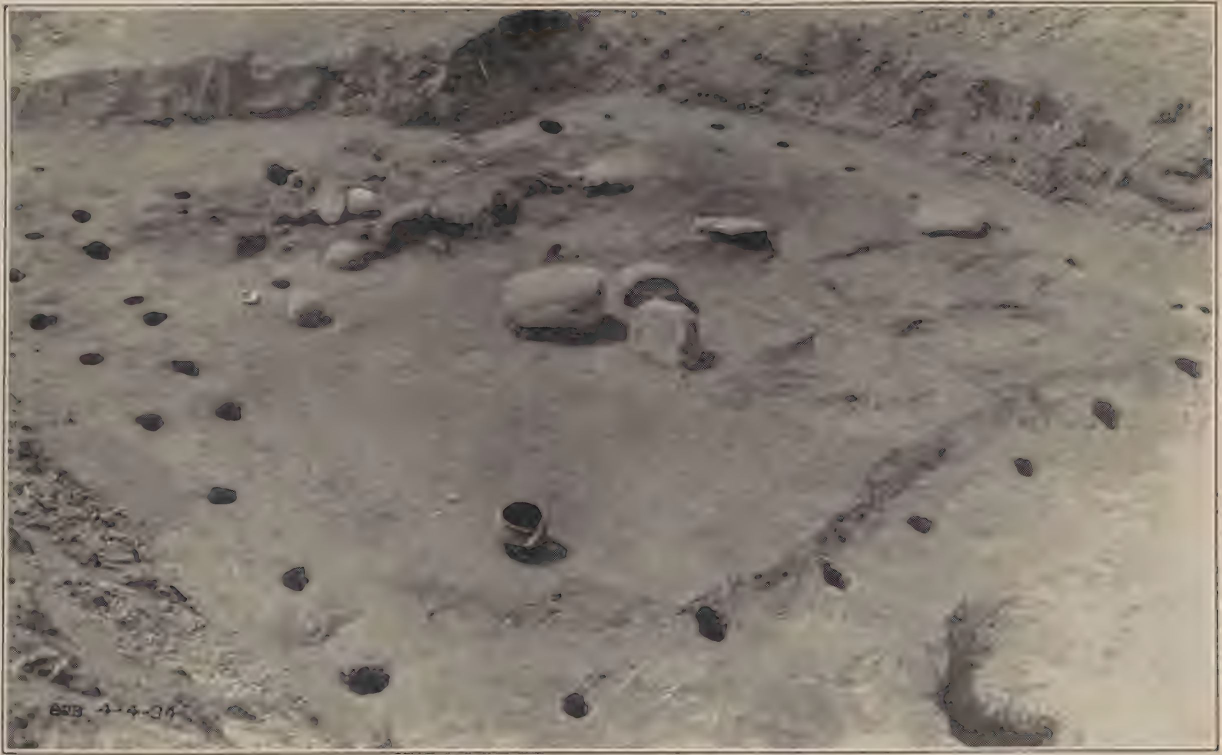
b. Circular fire pit. Feature No. 3, Site No. 11.



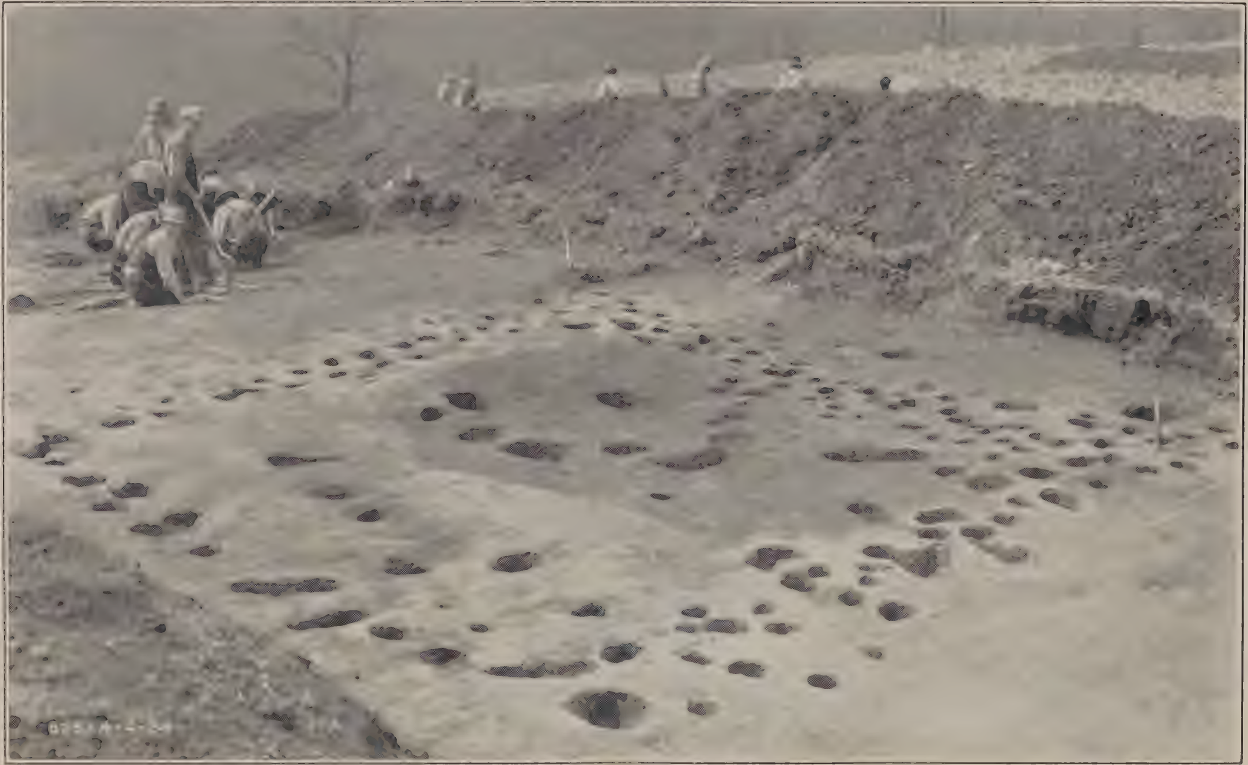
a. Burned structure. Feature No. 4, Site No. 11.



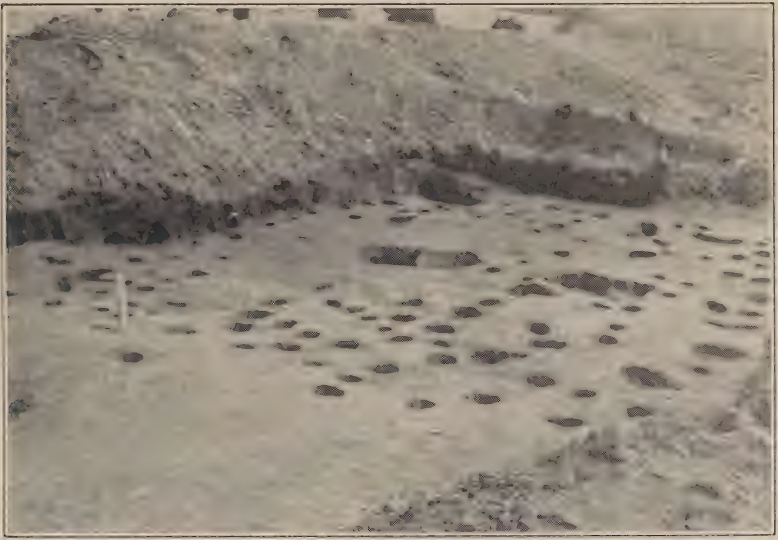
b. Northwest corner of the floor. Structure No. 7, Feature No. 10, Site No. 11.



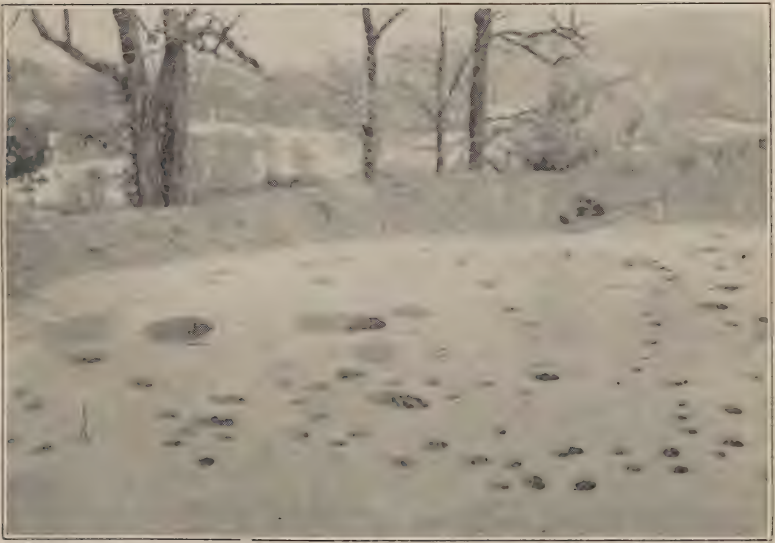
Structure floor. Feature No. 4, Site No. 11. (Note fireplace of three stones.)



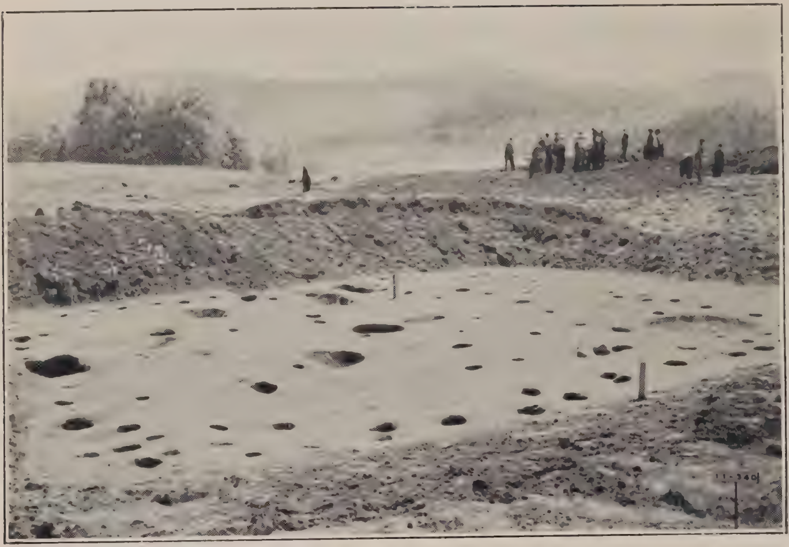
Post-mold pattern. Feature No. 9, Site No. 11.



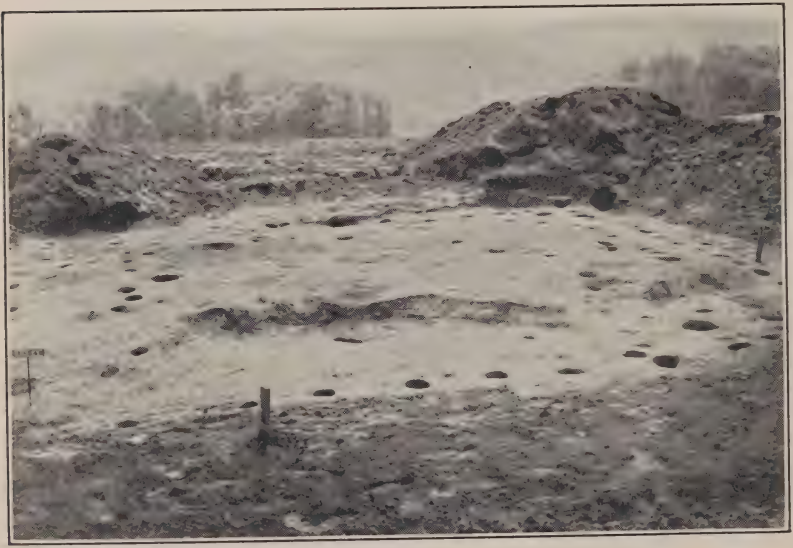
a. Post-mold pattern. Feature No. 13, Site No. 11.



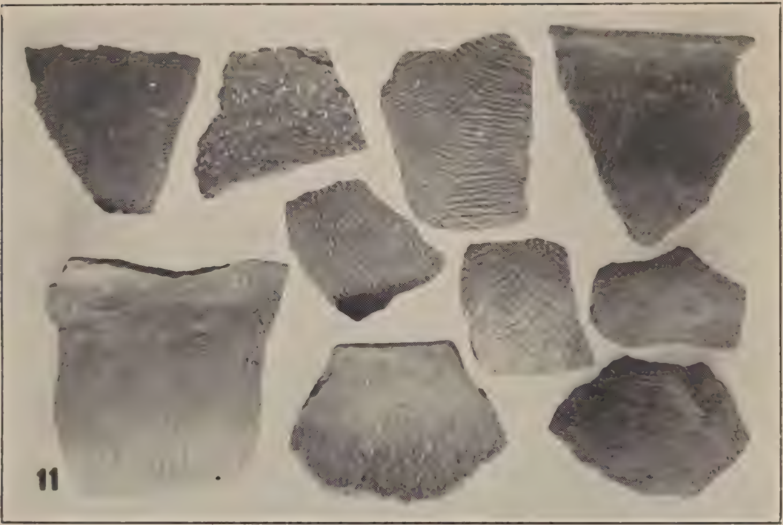
b. Post-mold pattern. Feature No. 18, Site No. 11.



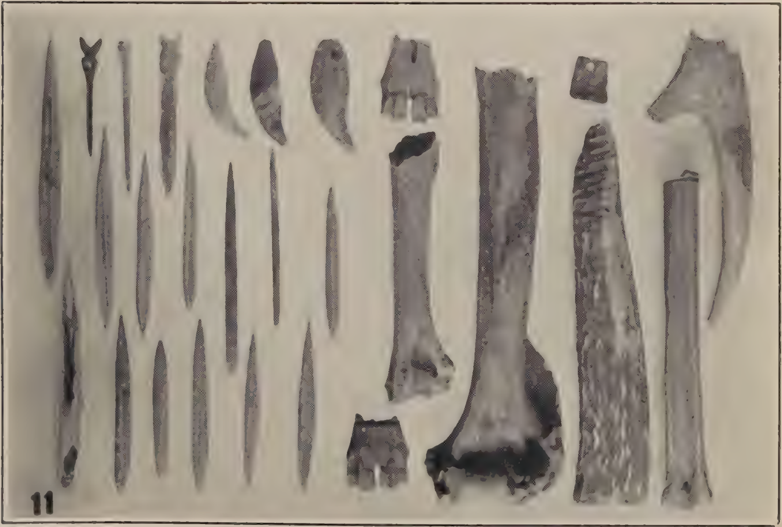
a. Floor pattern. Feature No. 15, Site No. 11.



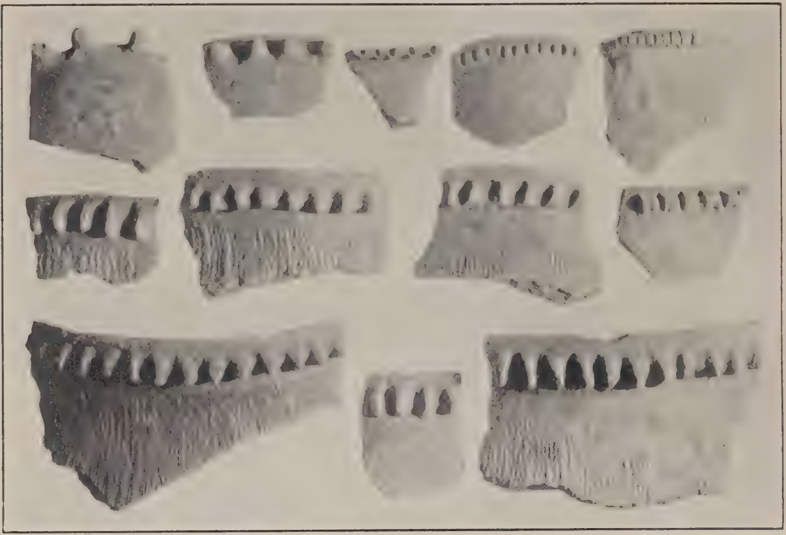
b. Structure pattern. Feature No. 16, Site No. 11.



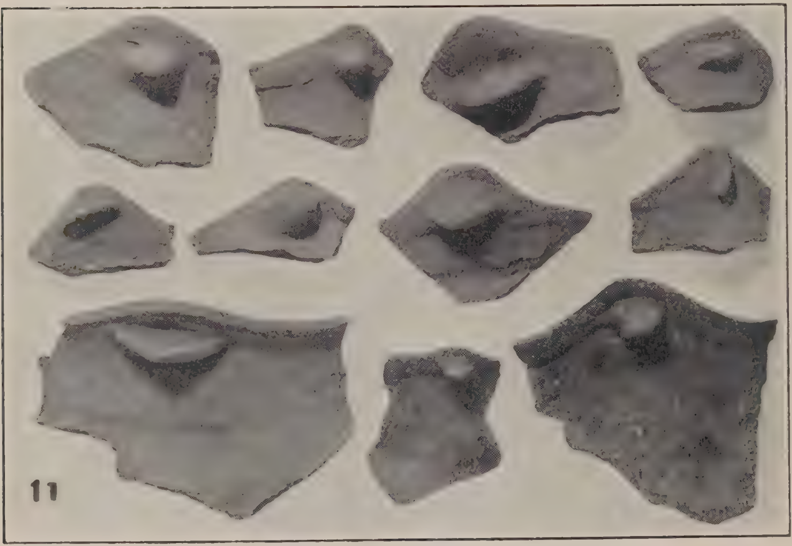
a. Cord-wrapped, paddle-marked sherds. Site No. 11.



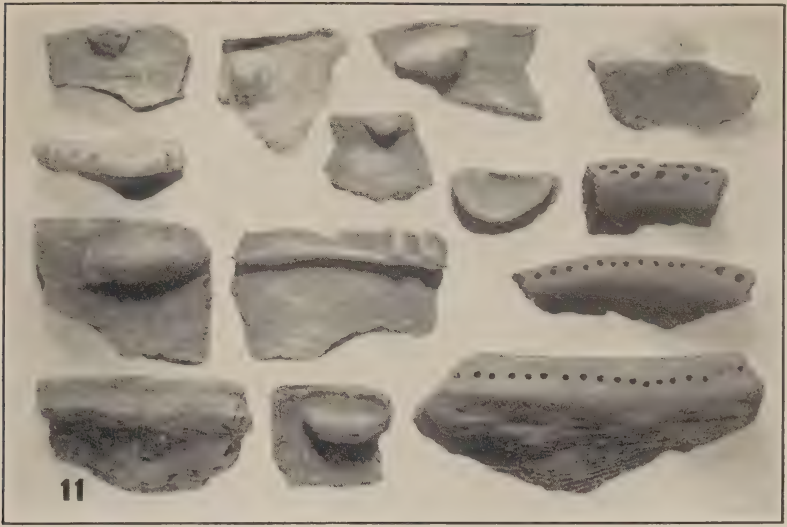
b. Bone artifacts. Site No. 11.



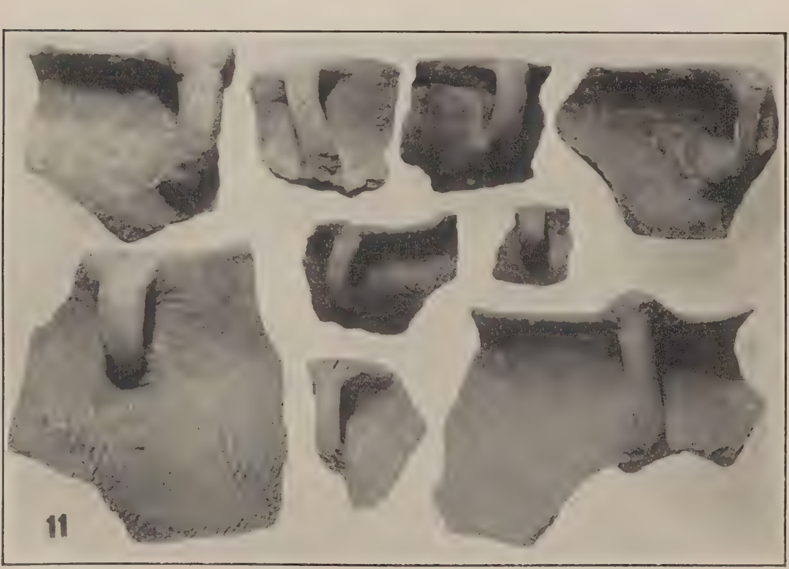
a. Upper row, rim bosses on bowls and incised rim strip; lower rows, rim bosses on jar B. Site No. 11.



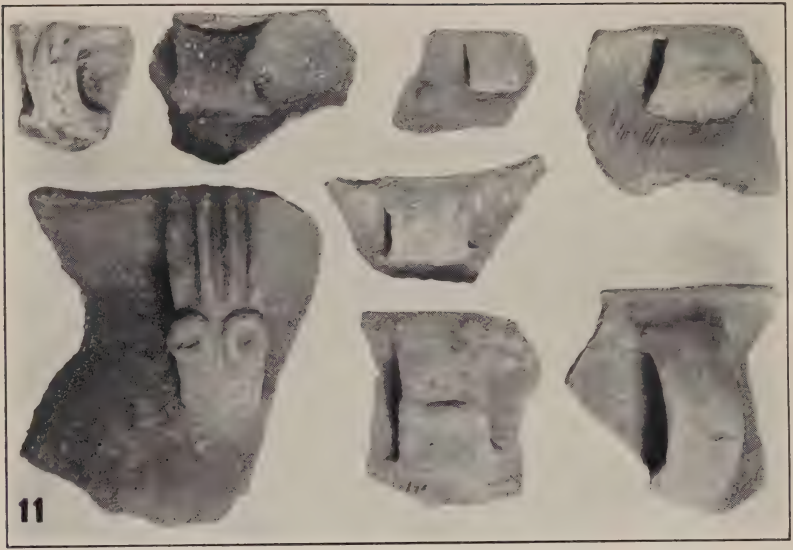
b. Pointed rims and one elevated rim in the lower left-hand corner. Site No. 11.



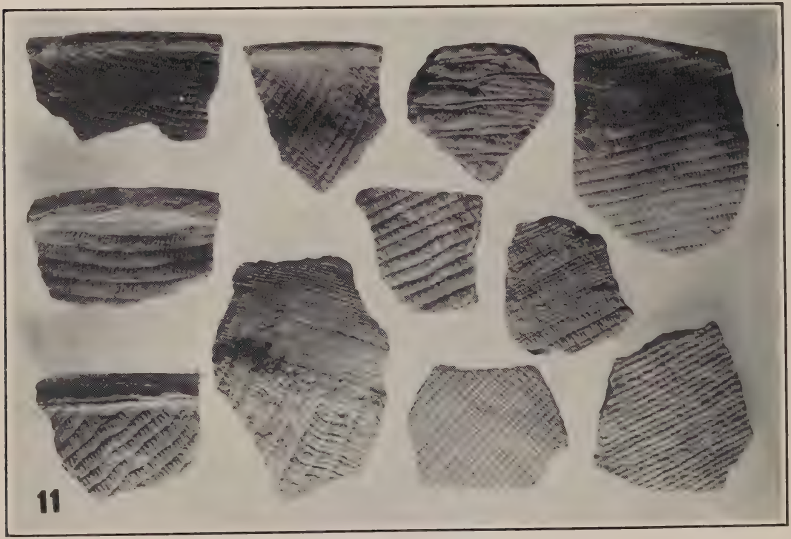
a. Lug handles on jar B and four salt-pan sherds, three of them with punctate holes in the lip. Site No. 11.



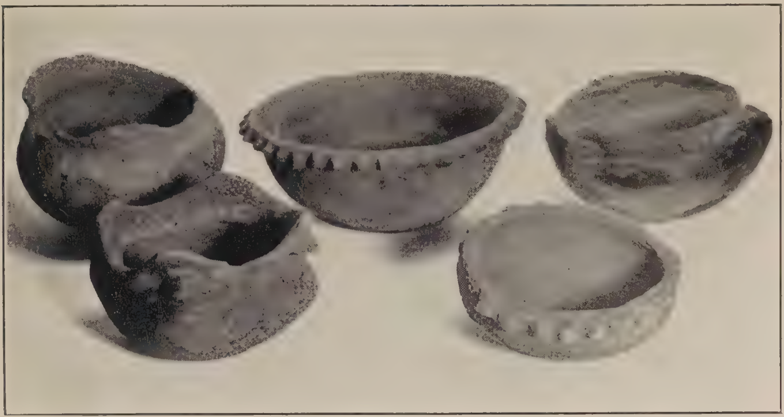
b. Loop-handle variations. Site No. 11.



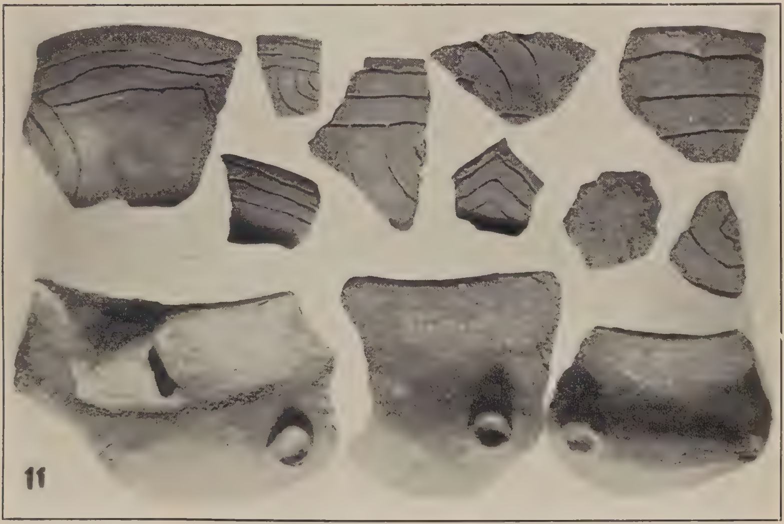
a. Strap-handle variations. Site No. 11.



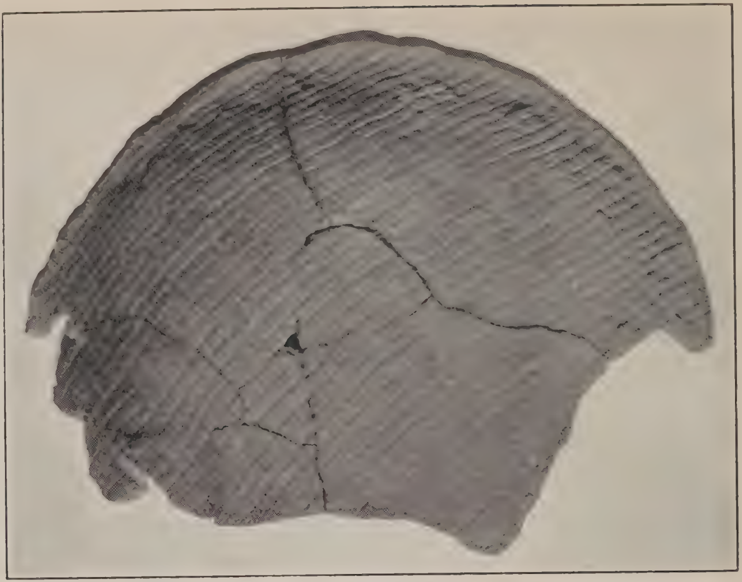
b. Salt-pan sherds with fabric impressions. Site No. 11.



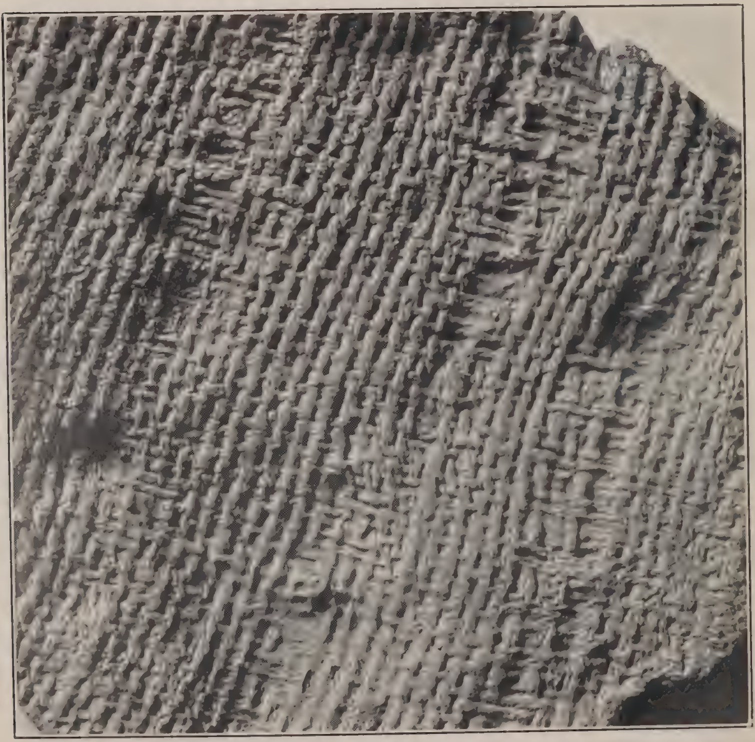
a. Three bowls, a pointed rim jar, and the body of a plain jar from the floor of a deserted dwelling. Site No. 11.



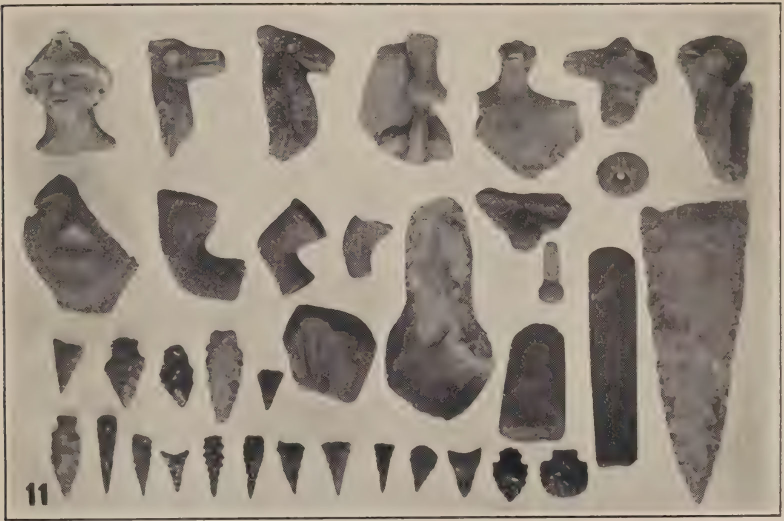
b. Upper group, incised decoration on bowl rims and a grilled stamp sherd; lower row, strap handle and shoulder protuberance on a jar. Site No. 11.



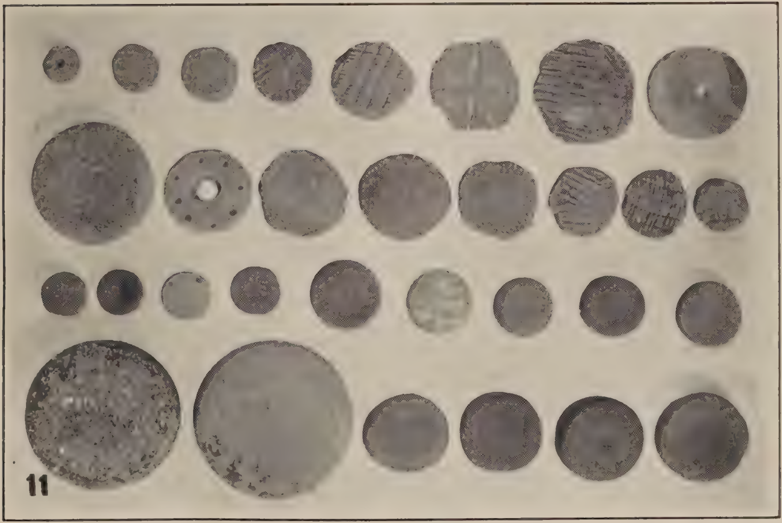
a. Large section of a "salt pan," textile marked. Site No. 11



b. Positive clay impressions of textile-marked sherds. Site No. 11.



a. Zoomorphic pottery forms; stone implements. Site No. 11.



b. Dicsoidals of many materials. Site No. 11.

The Clinch River is located about one-half mile to the south. The surrounding terrain is characteristic of the remainder of the Norris Basin, with respect to its numerous hills and depressions. On the side of the hill which has a western exposure and from which the limestone strata protrudes is the entrance to Wallace Cave. High-water survey stakes in the vicinity indicate that the mouth will be slightly above the high-water mark.

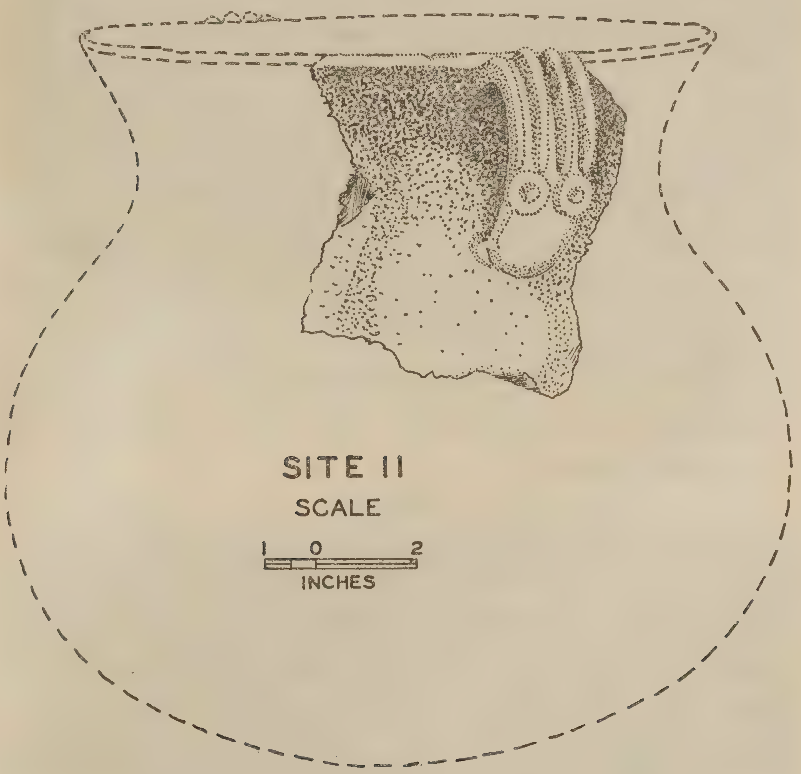


FIGURE 55.—Drawing restoration of vessel and handle.

The mouth of the cave, shown in plate 82, *a*, presented the appearance of a rock shelter, being 11 feet 6 inches in height at the front and 5 feet at the rear. The floor was level and the ceiling sloped toward the rear. At the rear northeast corner of this shelter was a small entrance leading into extensive caverns abundant in travertine formations.

The floor of the shelter was partially excavated. (Pl. 83, *b*.) The midden was found to vary from 18 inches at the front to 3 feet at the rear. This deposit consisted of humus, ashes, charcoal, small and large rocks, and some mussel shells and animal bones. Due to the melting of the snow and icicles on the face of the cliff, the soil in the outer half of the shelter was too moist to permit excavation. Because of the small size of the shelter—35 feet by 30 feet—it was expected that the floor would not yield abundant remains. No burials were found in the cave. All artifacts recovered were chance inclusions in the midden deposit of the cave floor.

Pottery

Sherds from this site are largely cord impressed of medium thickness, fairly hard, and gravel tempered. The gravel seems to be made of crushed limestone or white chert which had been partially calcined. Generally these sherds are to be distinguished superficially at a glance by the unusual depth of the cord impressions. It appears that these cord impressions were not all made by a paddle, but that some were impressed by rolling over the surface a small cord-wrapped cylinder. This type of sherd is shown in plate 83, *a*. There is no evidence of lugs, handles, or other forms of decoration. However, one sherd as shown appears to be the base of a vessel of this type having four legs.

Plain sherds, gravel tempered, occur rarely. The only other type of pottery found here is the stamped ware shown in the lower right-hand corner of plate 83, *a*, which is not relatively abundant. This is also gravel tempered.

Artifacts

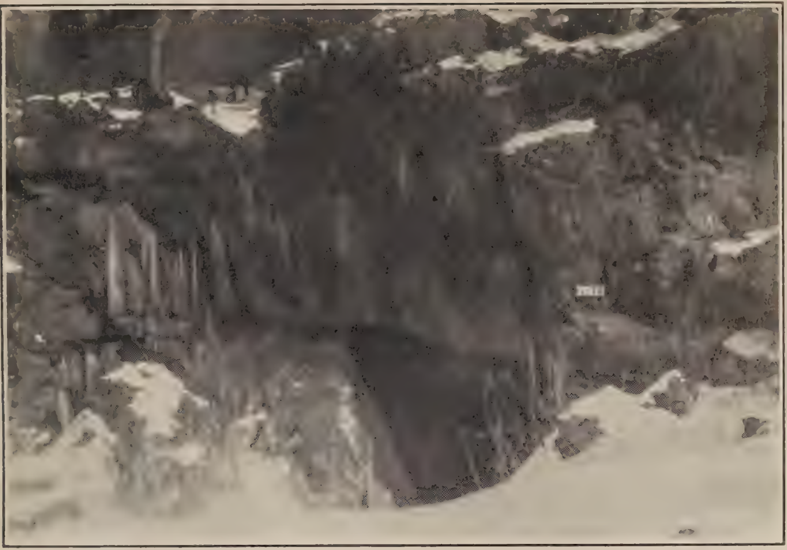
The artifacts consist chiefly of crude limestone hoes, as shown in plate 83, *b*, and crude limestone pestles. There were no mortars or lapstones found in association, and these crude pestles may be little more than hammerstones. A few arrow points, as shown, were found, together with fragments of a stone tube and a two-hole steatite gorget. This last specimen is especially interesting because, having been broken, it shows evidence of attempted repair. Two small cylindrical holes were cut near the broken edge. The original holes in this gorget are conical as if made by flint reamers.

Conclusions

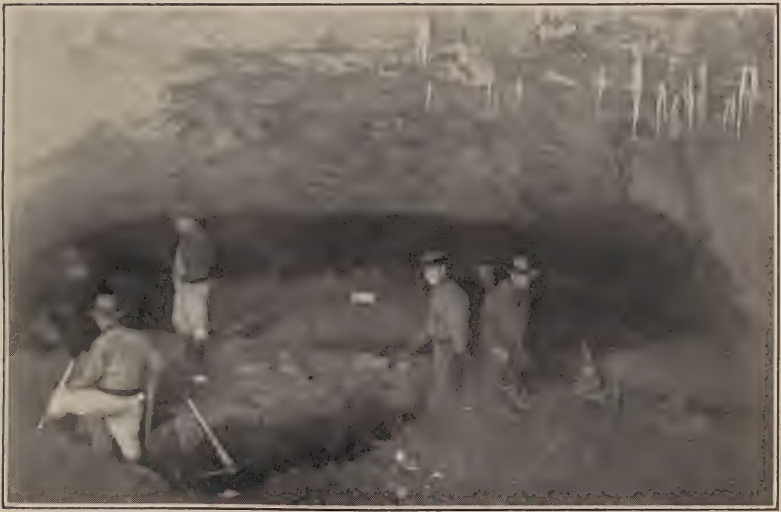
From the evidence obtained it appears that this site is related to Site No. 3 and has little, if any, apparent affiliation with any of the mound sites.

Site No. 13.—BULLOCK CAVE

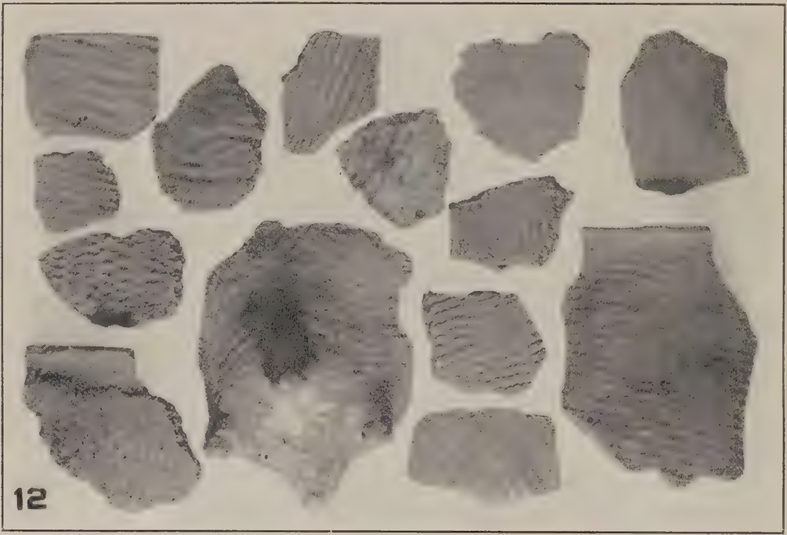
Approximately half a mile from Lindsay Mill, in Campbell County, is a cavern known for many years as Bullock Cave. From its position, surroundings, and formation it was rather well adapted



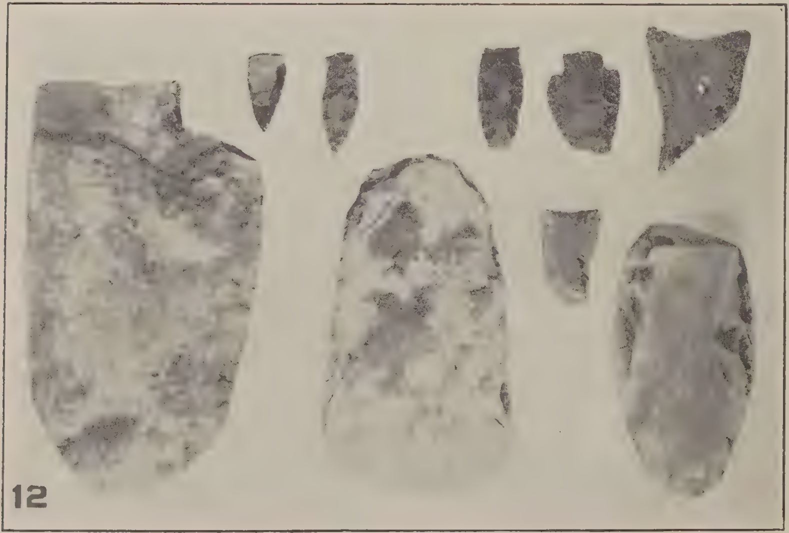
a. Mouth of Wallace Cave in winter. Site No. 12.



b. Excavating floor, Wallace Cave. Site No. 12.



a. Sherds showing grilled stamp, cord-wrapped paddle, and fabric-impressed surface finishes; also a four-footed vessel. Site No. 12.



b. Stone artifacts. Site No. 12.

to the needs of primitive people in search of shelter. It is situated at the base of a rocky hill which rises precipitately from a cultivated field which sloped downward toward the base of the hill, with opening on the west.

The mouth, shown in plate 84, *a*, situated as it was at the lowest elevation, had had to accept the drainage from the field, with the result that about one-third of the width of the floor along the south wall had been washed down to bedrock. Many large rocks cumbered the floor at a point beginning about 60 feet from the mouth and extending several hundred feet. Beyond the rocks it was impossible to make explorations, due to the deep clay mud and water which covered the floor. The presence of an old boat suggested the possibility of a rather extensive cavern containing much water.

The mouth of the cave faces the road, which is not more than 300 yards distant. Several stone mounds were reported a short way down the road, but when these were located it was discovered that they had been so badly disturbed that they were hardly recognizable as mounds. It would have been interesting to determine whether the same people who built the cairns (stone mounds) occupied the neighboring caves. Unfortunately such a small amount of material was recovered from the stone mounds that it seemed quite impossible to make any worth-while comparisons with the specimens which had been recovered from the caves.

Excavation was begun along the edge of the wash, following the bedrock toward the north wall. The midden material consisted of ashes, charcoal, shell, animal bones, and humus. Eight pestles were recovered from the small space excavated. In addition, 2 mortars, a deer-antler chisel, 53 bone implements, 2 antler-tip arrow points, a steatite potsherd, and a sandstone potsherd were found.

At the south side of the mouth and beneath a shallow deposit of talus and earth the partial remains of a child and an adult were found. Of the child burial, only a few fragments of the cranium remained. In the case of the adult the skull was missing and a few badly decayed fragments of long bones remained. A local inhabitant informed us that several men had done some digging in the cave 2 years before and had recovered several skulls, which fact probably accounts for the disturbed condition of the burials.

POTTERY

Typical sherds are shown in plate 84, *b*. This picture includes sherds of carved steatite and drilled sandstone. All pottery is gravel tempered, fairly hard, coarse texture, plain rims, with no lugs or handles. Surface decorations show: (1) cord-wrapped small cylindrical tool impressions, (2) cord and grass paddling, and (3) a small amount of textile impress. The textile appears to be the same as that found on Site No. 3.

ARTIFACTS

Stone artifacts from this site consist almost wholly of crude pestle and mortar stones. The pestle shown in plate 85, *a*, is made from a fossil lepododendron. Bone artifacts were simple modification of bone splinters and horn. Some cut and sharpened antler tips were found.

SITE NO. 14.—HAWKINS CAVE

Among the numerous caves investigated in and around the Norris Basin was one known as Hawkins Cave, which is situated on the precipitous right bank of the Clinch River overlooking the Norris Dam. There are two caves at this point within 75 feet of each other. Only the upper one was investigated.

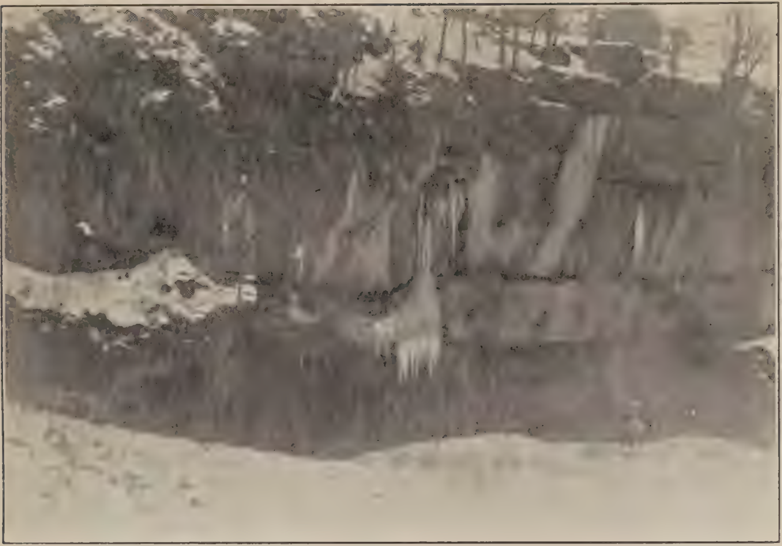
The mouth of this cave has the appearance of a rock shelter and in the floor deposit of the latter was a great abundance of mussel shells, many of which appeared to have been pried open by a sharp implement. The fact that in the 50 square feet excavated not more than 25 or 30 potsherds were recovered, and almost no animal bones, seemed to indicate that habitation had not been lengthy. The sherds bore the customary cord-marked design, as shown in the upper row of sherds in plate 85, *b*.

CONCLUSIONS

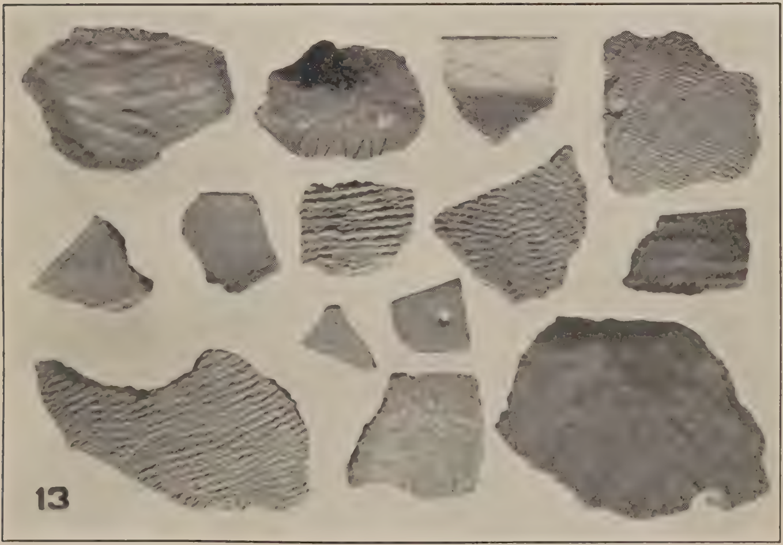
An inspection of the meager evidence of occupancy of Sites Nos. 13 and 14 would suggest that they are most closely related to Sites Nos. 3 and 12.

SITE NO. 15.—JOHNSON FARM CEMETERY

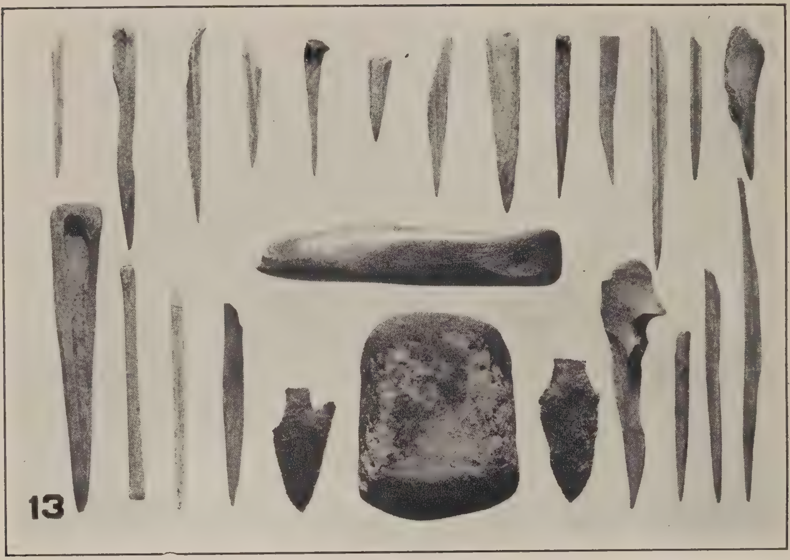
The J. B. Johnson farm is on the Oliver Spring Road on Clinch River, 4 miles from Clinton, in Anderson County. The site, a burial ground, was located on a level sandy terrace about 15 feet above the usual level of Clinch River, which is normally about 3 feet deep at this place. This land was subject to overflow at times of high water. In the spring of 1917, at such a time, the Clinch River overflowed this area and lifted and carried away the soil to a depth of several feet over an area of an acre or more near the east end of this terrace. This action of the river left exposed many skeletons, specimens of pottery, and other artifacts. The sandy soil on this river bank is



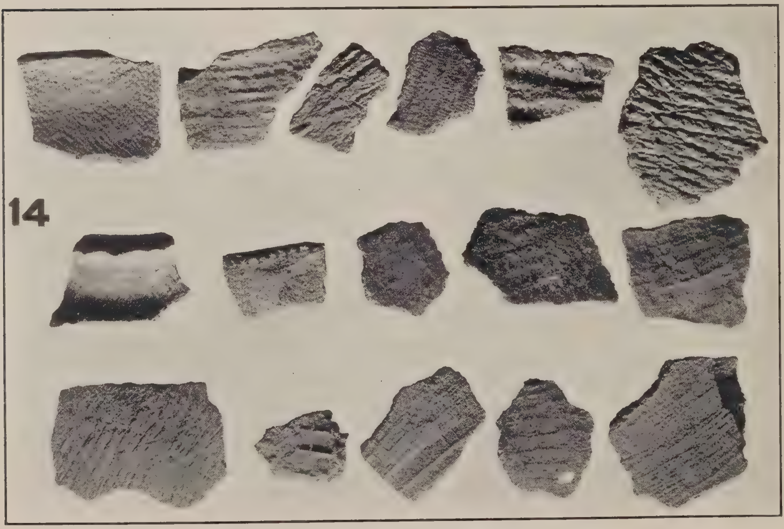
a. Mouth of Bullock Cave in winter. Site No. 13.



b. Sherds illustrating the cord-wrapped paddle, grilled stamp and fabric impression; also a broken gorget and steatite bowl fragment. Site No. 13.



a. Artifacts. Site No. 13.



b. Sherds. Site No. 14 and Site No. 20.

very fertile and has been in cultivation down to the river edge for a long time.

The soil contains mussel and periwinkle shells in abundance, together with broken potsherds, chipped flint, and the usual other evidences of the prehistoric village. No post-mold patterns or other evidences of structures were found on this site. If structures had once existed here, the post molds would probably have been destroyed by the periodic overflow and by the cultivation of the soil. Sandy soils do not readily retain post molds; and, further, since there was no well-defined humus line on this site, post molds, if they existed, and were filled with loose soil, would be undistinguishable for practical purposes.

Chief interest attaches to this site because it was used as a burial ground. No extensive investigation was possible, since the owner desired to begin the planting of corn about the time the investigation was begun. Since the time of investigation was limited to 3 days, the exploration consisted in running trenches about 5 feet wide and 3 feet deep, approximately parallel to the river's edge along the highest part of this terrace. The soil was quite black and sandy at the top, but, upon removal of the upper 2 feet, the lower sand was somewhat lighter in color and more compact. Where graves had been made the original black topsoil had been filled in over the body, which made a dark area in the floor of the trench. The trenches were thus extended and the floor swept clean, and an endeavor made to find dark patches on the trench floor which would reveal disturbed earth and possible burials.

A deposit of mussel and periwinkle shells with small stones was found 2 feet under the surface. This deposit was 8 feet by 11 feet and was 6 inches thick. It is thought to have been the result of a storage bin on the old village site which after use had been filled with shell and other rubbish. Excavation under it revealed no disturbed earth.

BURIALS

Burial No. 1.—At a depth of 16 inches below the ground surface the burial of an infant, extended in the flesh, was found. The body had been placed on the right side with the head to the northwest. The preservation of the bones was poor. No artifacts were found in association with the burial.

Burial No. 2.—At a depth of 17 inches below the ground surface the fully flexed skeleton of an adult female was found. The body had been buried on the right side with the head to the south. The hands were placed between the legs. The preservation was good. Two clay vessels were found in association; one between the face and the knees and the other touching the right temporal bone.

Burial No. 3.—About 1 foot from the lower end of Burial No. 2 the fully extended burial of an infant was found. The body had been placed on the back with arms along the side. The head was toward the east. The preservation was fair, but the skull was damaged by workmen before the burial was discovered.

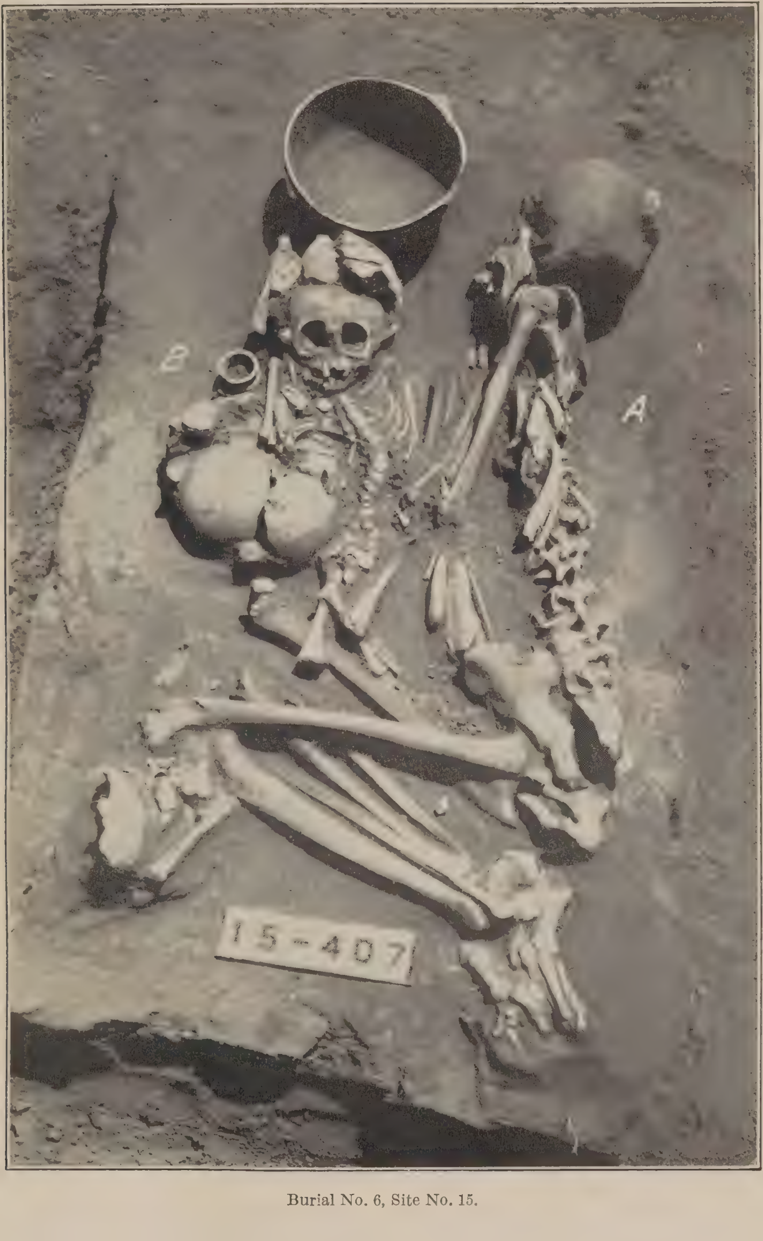
Burial No. 4.—At a depth of 18 inches partially flexed remains of an adult female were found. The body had been placed on the right side with the head to the north. The preservation was good. Associated with the burial were two mussel shells, one olivella bead, and one broken pot.

Burial No. 5.—At a depth of 9 inches below the ground surface a rock pile made of 16 large stones was encountered. Under the pile, at a depth of 21 inches, the partially flexed skeleton of an adult male was found, the body lying on the back, with the face to the left and the head to the east. The right arm was across the torso. The legs were bent at the knees and lay in a vertical position. The preservation of the bones was fair. No artifacts were found in association with the burial.

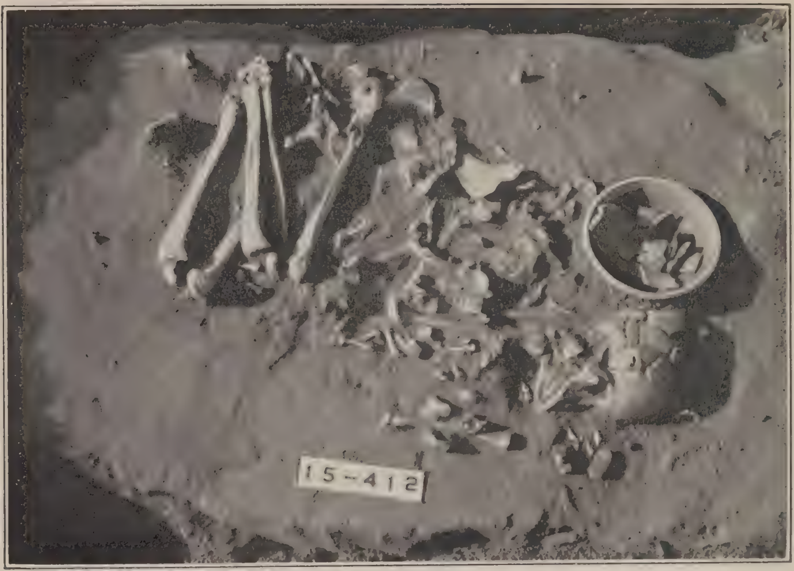
Burial No. 6.—This burial contained a group of three skeletons, an adult female and two children (pl. 86). The skeleton of the adult (A) was fully flexed, and had been buried on the right side with the head to the southeast. The preservation was good. The burial occurred at a depth of 22 inches below the surface. The body of the first child (B) lay on the back. The preservation was fair. The body of the second child (C) lay extended opposite (B). The face was to the right, but the exact placement was difficult to determine. The preservation was poor. Part of the skull of the first child (B) lay near the knees of the adult (A), which may suggest an intrusive disturbance of (C) at the time of the burial of (A) and (B). In association with these burials were found three bone awls and an awl fragment, one worked bone, one arrow point, and a celt near the stomach of the adult. An 8-inch bowl was found near the face of the adult, and one perforated periwinkle shell lay between the femur and the tibia. Four olivella beads lay near the lower limbs, and a steatite ring, probably used as a bracelet, was also found.

Burial No. 7.—At a depth of 26 inches below the surface, an adult, laid on the back with the head to the east, was found. The left arm was flexed over the breast and a large limestone rock was set on edge over the right arm. The preservation of the bones was very poor. No artifacts were found in association with the burial.

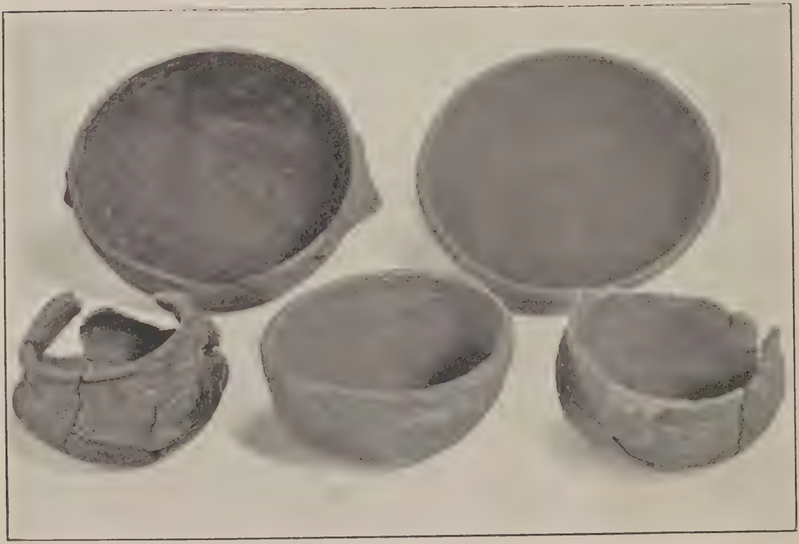
Burial No. 8.—At a depth of 18 inches a midden pile of mussel shells, periwinkle shells, bones, tortoise shells, and potsherds was found. Under this midden pile Burial No. 8 was found. The partially flexed skeleton of an adult female, with the face to the left and the



Burial No. 6, Site No. 15.



a. Burial No. 8, Site No. 15.



b. Pottery vessels. Site No. 15.

head to the east, was found at a depth of 35 inches. The preservation was poor. In association with the burial was one large clay bowl within which was another broken bowl. The larger bowl was touching the occipital (pl. 87, *a*).

POTTERY

Sherds from this site show no large or heavy vessels. The ware here is generally thin and of two classes, shell tempered and sand or gravel tempered. Shell-tempered sherds are plain small vessels or grass paddle-marked. One small mortuary vessel was of four-lobed, square-rimmed design, having four triangular punctate areas, one between each lobe, as shown in plate 87, *b*. The sand-tempered ware all bears a square stamped design, as shown in plate 88, *a*. This ware is quite thin and is porous as the result of the loss of large pieces of gravel.

Plate 87, *b*, shows a group of mortuary vessels from this site. Plate 88, *a*, shows artifacts taken from Burial No. 6. Besides a shell pendant and beads, a double-bitted small celt was found. With the burial of a child in this group there was a steatite ring, as shown. This ring was 1.8 inches outside diameter and 0.8 inch in depth.

CONCLUSIONS

Site No. 15 was the only prehistoric cemetery found during this survey. All other groups of burials were associated either with caves or mounds. For this reason it was most unfortunate that it was not possible to carry on excavation over a larger area at this site.

The rather meager excavation permitted definitely suggested that the cemetery had once been a village site in which storage bins had been dug. When such storage bins were emptied of their supplies they later were used as refuse pits. Sometimes burials were made in them, these burials being covered with rubbish of the village, which contained mussel shells and potsherds.

Flexed burials predominated and the use of shallow bowls as mortuary offerings seemed to be general.

From the material recovered there appears to be very little, if any, connection between this site and any other site investigated during the survey. The entire absence of any evidence of wooden structures seems significant, and hardly to be accounted for by the relatively small area investigated.

SITE No. 16.—TAYLOR FARM MOUND

The farm of Dr. Samuel Taylor is 3½ miles west of Clinton, Anderson County, Tenn. It is on Clinch River and lies near Highway No. 61. This particular site, a circular earth mound about 30 feet in diameter and 10 feet high at the center, is situated on a bluff overlooking the river on the north side. The mound lies on a part of the old Cross estate which was purchased by Dr. Taylor. In the Cross family, the history of the mound goes back well over 100 years. One of the Cross heirs who lived nearby said that, to the best of his knowledge, it had never been disturbed or cultivated.

The mound was evidently constructed as a burial mound. The burials were at all levels, varying from the original ground surface to within a few inches of the present mound surface. The mound was in a woodland, and growing on it were 12 large trees—hickory, oak, pine, cedar, and elm—the largest of which was 17 inches in diameter, as shown in plate 88, *b*. The roots of these trees had penetrated the mound in all directions, which permitted the entrance of water and disturbed the arrangement of the burials. In consequence of this root penetration, the skeletal material was, in general, in very poor condition.

The mound rested partly upon a well-defined humus layer of the old forest floor, which was 6 inches thick, but within the mound no stratification was discernible. The earth forming the mound was clean clay mixed with humus and containing many large stones. It contained no charcoal, shell, potsherds, or other evidence of having been gathered from a village site. In fact, neither in the mound nor in its vicinity was there any evidence that a village site had existed in the immediate neighborhood. Sixteen adult burials, which were surprisingly devoid of artifacts, were found in the mound. The vertical profiles above the burials showed no evidence of intrusion; that is, there seemed to be no evidence that graves were dug into the mound after its completion. The evidence, on the other hand, seemed to show that the bodies were laid on the surface of the ground and covered with earth. The repetition of this process produced the mound as it existed when excavation was begun.

The mound was staked in 5-foot blocks, as shown in the ground plat (fig. 56), and a trench 5 feet wide was cut down on all four sides of the staked area. The northeast corner stake was designated 0.0, the integers marking blocks southward and the decimals designating blocks westward. This photograph is a view of the southwest of the 0.6 wall and the humus line is clearly shown by the dark band 6 inches above the trench floor on the vertical profile. However, on the 0.7 wall many large native rocks—the outcropping from lower ledges—were encountered with no humus line above them. When the south trench, shown in plate 89, *a*, and the east trench, shown in plate 89, *b*, were cut down, a much larger number of these native stones was encountered. They were weathered, and

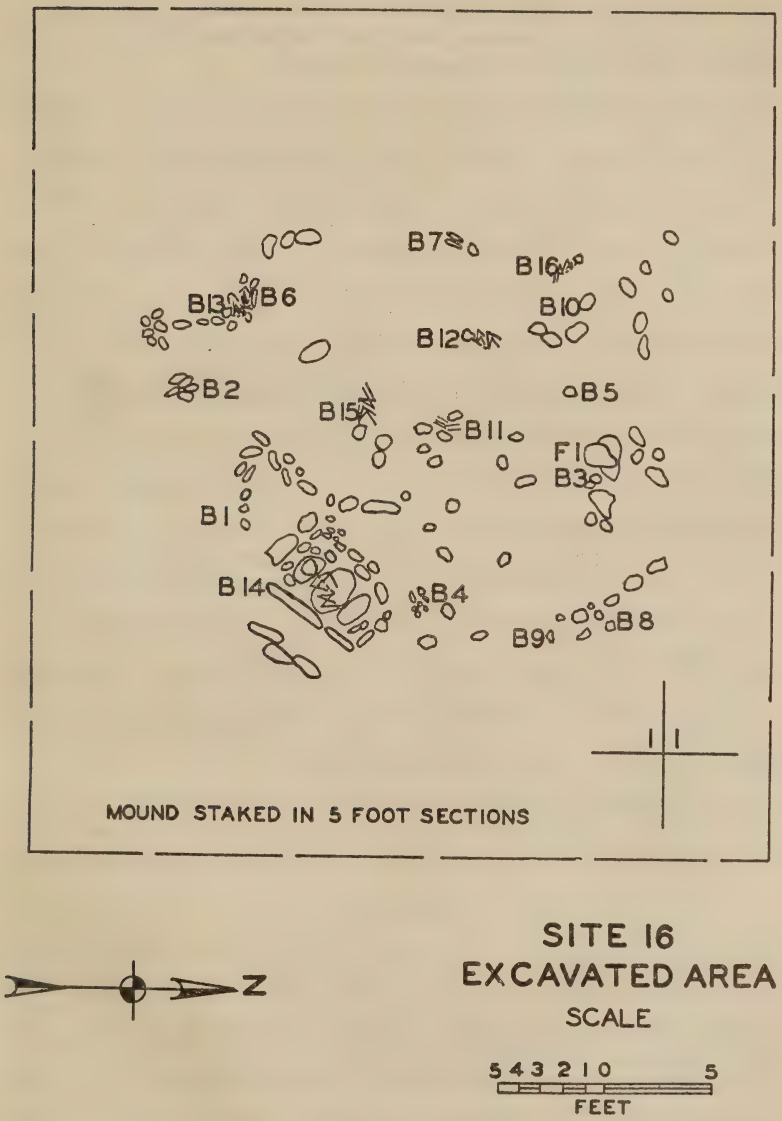

B7
B16
B13
B6
B10
B12
B2
B5
B15
B11
F1
B3
B1
B14
B4
B8
B9
MOUND STAKED IN 5 FOOT SECTIONS
N
SITE 16
EXCAVATED AREA
SCALE
5 4 3 2 1 0 5
FEET

Figure 56.

had the appearance of once having been exposed to surface action. Many were quite large and appeared to be a natural part of the rocky bluff upon which the mound was located. They were, in most part, embedded in heavy clay and rubble and showed no evidence of ever having been disturbed by man.

It would thus appear that prior to the erection of this mound this rocky river bluff had suffered erosion to the point where many large rocks, the top of the underlying strata, had been exposed to weathering. Some clay remained in between these large exposed boulders, and the trees of the forest grew in this thin soil. In these pockets forest humus accumulated to make a 6-inch layer of dark soil between the exposed rocks. The builders of the mound chose this location for their burials, laying down burial after burial, and covering them with clay mixed with dark soil. This clay and soil they obtained wherever they could find it lodged in rock pockets. Available soil was scarce at best in the immediate vicinity, so they also used loose stones of such size as to be easily transported. A quantity of large stones were thus found scattered through the accumulated earth of the mound. In one burial, certainly, possibly in two, there seemed to have been a definite attempt to place the body on a stone pavement or to make for it a stone grave. In all other cases, where stones were used in seemingly definite association with burials, they appeared to have been used to cover the body, or were irregularly placed on the body at the time of burial. Since no evidence of intrusion was noted, although carefully sought, the conclusion is forced upon one that each body was laid upon what was then the surface and covered over by earth brought from elsewhere. In this way the mound was erected.

It would appear that this area had never been disturbed by cultivation and that erosion had had little effect in leveling the mound. This was due to the heavy growth of shrubs and trees on its surface.

BURIALS

Burial No. 1.—Six inches above the original surface of the ground a partially flexed skeleton of an adult was discovered. The body had been buried on the right side with the head to the east. The preservation was poor, and no artifacts were found in association. Two limestone rocks were found in association with the burial. One lay at the feet of the skeleton and the other lay between the femur and the tibia.

Burial No. 2.—This fully flexed skeleton, which was found 6 inches above the original ground surface, was very poorly preserved. The age of the person could not be determined. No artifacts were found in association.

Burial No. 3.—Under a pile of large flat stones 38 inches above the floor of the mound the fully flexed skeleton of an adult was discovered. The preservation was very poor.

Burial No. 4.—Thirty-three inches above the mound floor was found a body of indeterminate age and orientation. The bones were in poor condition, having been broken and disturbed after burial.

Burial No. 5.—On the original ground floor of the mound the remains of a skeleton were found. The only portions which were found were pieces of the skull.

Burial No. 6.—Two inches above the original floor of the mound the fully flexed skeleton of an adult male was found. The body had been buried on the right side with the head to the west. The preservation of the bones was very poor. One foot above the burial, and in association with it, was found the much broken monitor, steatite, platform pipe shown in plate 90, *a*.

Burial No. 7.—This burial, which was 38 inches above the mound floor, was so far destroyed by root action of the trees that its age and orientation were not determinate. There remained merely a grave area covered with fragmentary bones.

Burial No. 8.—This was the fully flexed burial of a young adult. The head was toward the east. This burial, which was on the original ground surface, showed post-burial disturbance by other and later burials. Some potsherds were found near the head.

Burial No. 9.—Fifteen inches above the original surface of the forest floor a disturbed burial, for which the orientation and disposition could not be determined, was found.

Burial No. 10.—On the original floor of the forest a fully flexed adult female had been buried. The body had been laid on its back with the head to the east. Thirty inches above this burial were two large flat limestone rocks under which was found a fragment of a conch-shell bead.

Burial No. 11.—A few inches below the present surface of the mound the very poorly preserved remains of a human skeleton were found. It was impossible to determine the age of the individual or the disposition of the body. The head was pointed north.

Burial No. 12.—Near the present surface of the mound the poorly preserved remains of an individual of indeterminate age were discovered. The body had been placed on its back with its head to the southwest.

Burial No. 13.—On the original ground surface, and covering an area approximately 52 inches long and 50 inches wide, a group of eight stones which formed a crude floor was found. In the group of stones were the poorly preserved remains of an adult. The condition of the bones was such that the orientation and disposition of the body could not be determined.

Burial No. 14.—This was the partly flexed burial of an adult male. The body had been placed on the back with the head to the southwest. The legs were flexed to the pelvis on the right, as shown in plate 90, *b*. The radius and ulna were twisted, showing that the palms were placed downward, so that the right forearm and hand lay under the right and left femora. The left forearm and hand lay under the pelvis and the proximal end of the left femora. To the east of the skeleton three large thin limestone rocks, set on edge, formed a border. To the north there were three smaller stones on edge, and in the center and 10 inches above the burial there was a flat stone laid horizontally. Along the southern side of the grave the rocks near the head were somewhat on edge. This platform is shown in plate 91, *b*. The burial had been removed when the picture was taken. A sandstone hammerstone, badly weathered, was found between the feet of the skeleton. A triangular rock was placed over the lumbar vertebra. On the rock platform, 6 inches above the head, was a broken hammerstone.

Burial No. 15.—The skeletal remains of a partially flexed adult buried on the right side with the head to the east was found only 4 inches below the present mound surface. The preservation of the bones was fair. No artifacts were in association.

Burial No. 16.—Twenty-two inches above the original ground surface the skeletal remains of a partially flexed adult were found. The head was to the east. The preservation of the bones was fair. No artifacts were found in association with the burial.

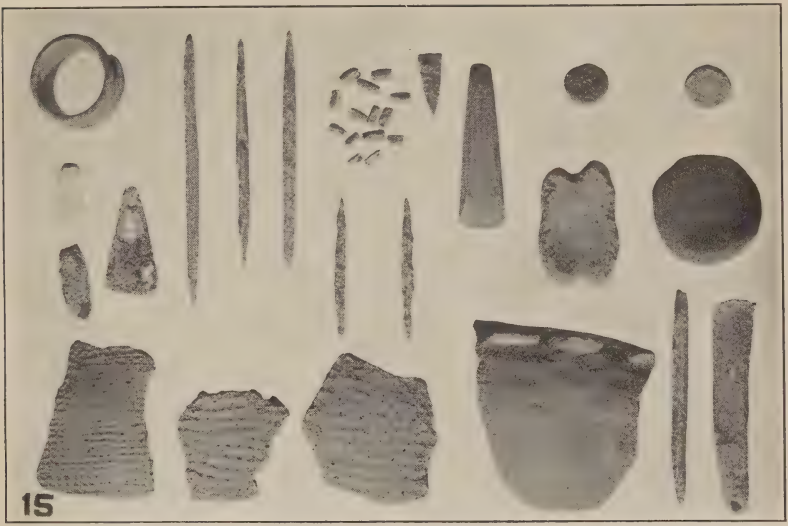
There were no graves of children found in the mound.

POTTERY

Only a few sherds were found in this mound. They were sand tempered, thin, black, and very hard. They were decorated with a stamped design, which had been partially obliterated by troweling when the clay was still plastic, as illustrated in plate 91, *a*. One small sherd of plain ware, shell tempered, was found.

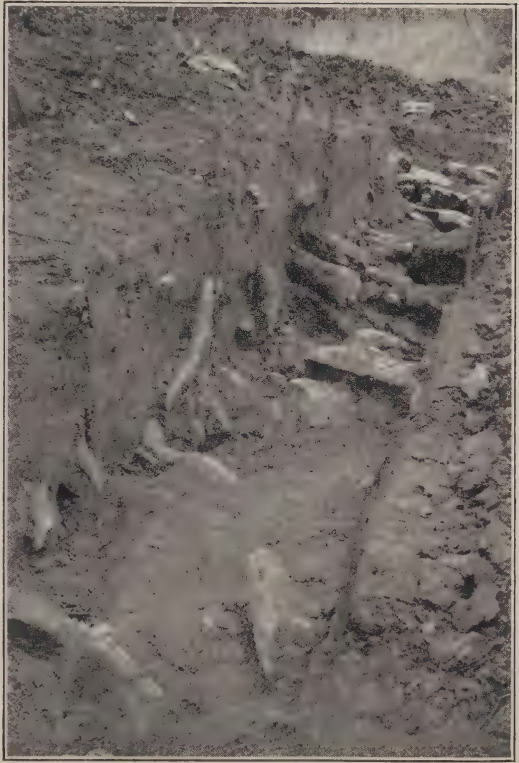
ARTIFACTS

This burial mound, which contained 16 burials, was devoid of artifacts, with the exception of the curved-base steatite monitor pipe shown in plate 90, *a*. This pipe, found some 12 inches above Burial No. 6, was broken in many pieces which were scattered over a small area. This suggested ceremonial killing at the time of interment. Not all parts of the pipe were recovered, although a careful search was made for the remaining fragments. Its extreme dimensions were: length 7.1 inches, breadth 2.1 inches, height 2.6 inches. It was

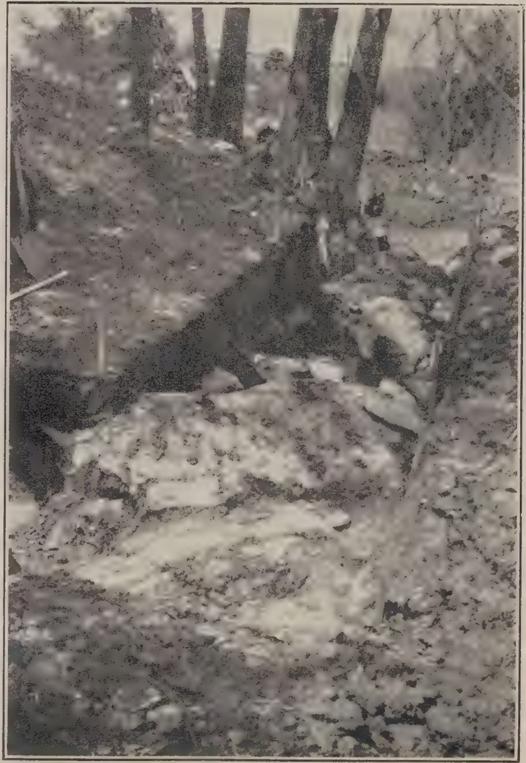


a. Artifacts. Site No. 15.

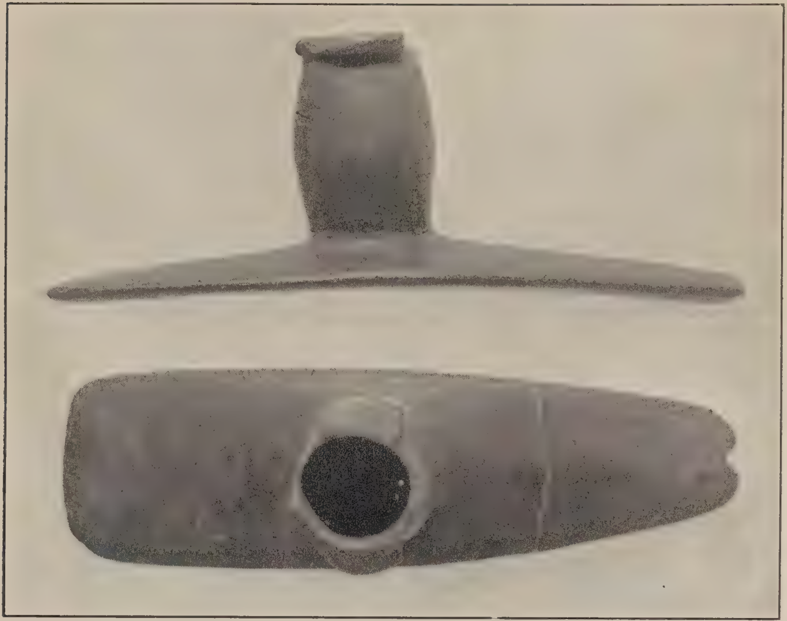
b. Taylor Mound. Site No. 16.



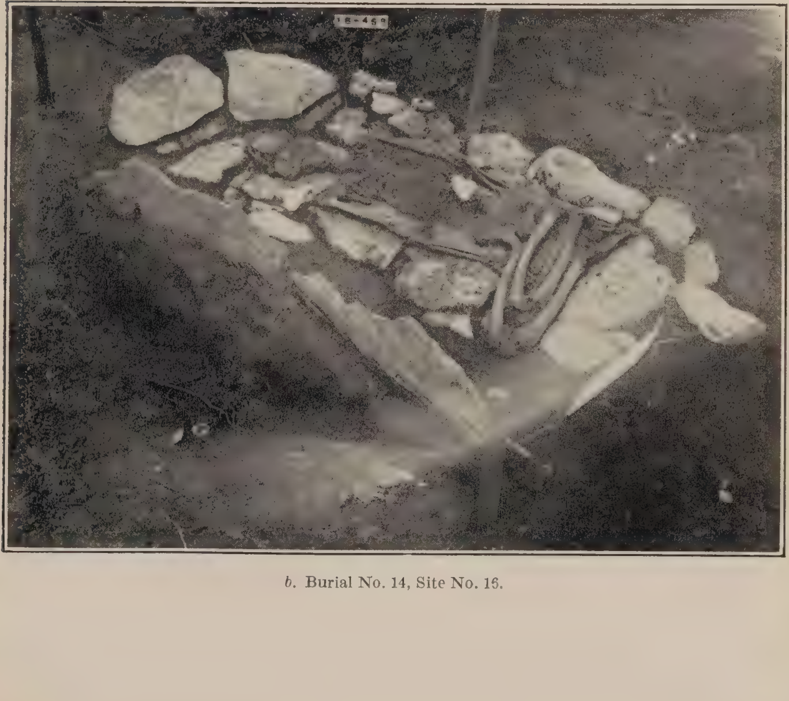
a. View from west. South trench between 6.0 and 7.0, Site No. 16.



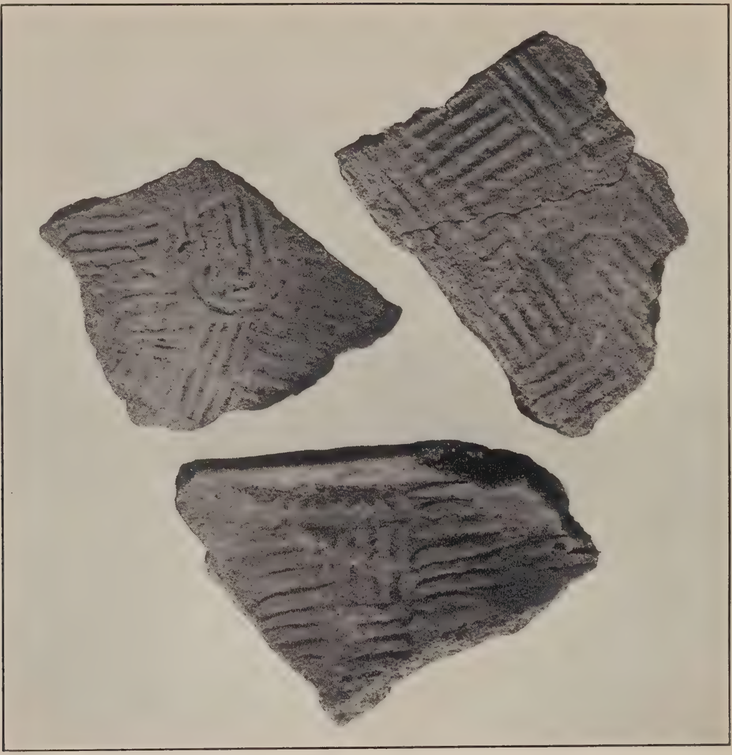
b. View from south. East trench between 0.0 and 0.1, Site No. 16.



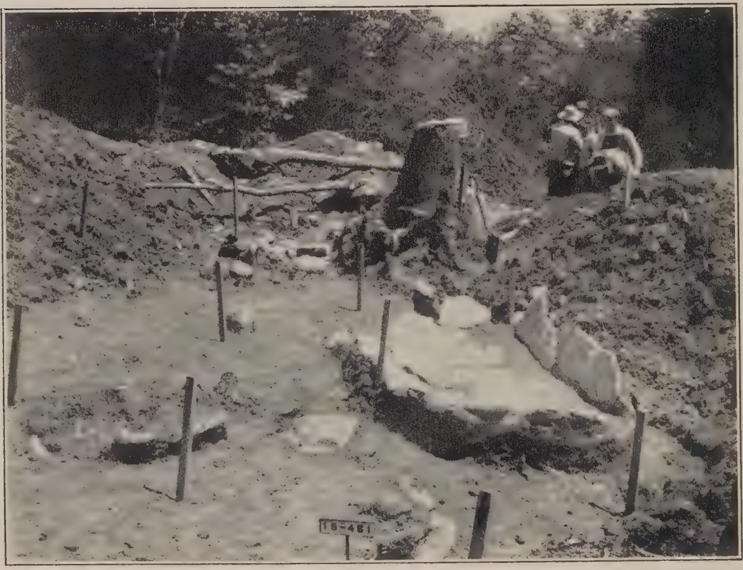
a. Curved-base steatite monitor pipe from Burial No. 6, Site No. 16.



b. Burial No. 14, Site No. 16.



a. Potsherds. Site No. 16.



b. Stone grave of Burial No. 14, Site No. 16.

carefully made, highly polished, and was a beautiful specimen of its kind before being broken.

CONCLUSIONS

This site, evidently a burial mound, built on a rocky bluff, is notable in that some attempt was made to use stones in prepared graves. The almost entire absence of artifacts with burials gives very little evidence of the cultural connection of this site.

The outstanding material find was the steatite monitor pipe. This pipe has a slightly curved base, yet the curvature is so slight and its form so much like the "flat-base" monitor pipe shown by West[1] that it may be properly regarded as of that type. In form it certainly differs markedly from the "curve-base" monitor pipes of the Hopewell complex, taken by Mills[2] and Shetrone from the Tremper mound. Pipes of the type shown in plate 90, *a*, as pointed out by West, have a wide distribution over the eastern United States and southern Canada. They have not been shown to be associated with any particular cultural group to the exclusion of others.

McGuire[3] expresses the belief that such pipes are not very old. He bases this conclusion on the fact that he observed what he thought were iron file marks on such specimens, thus placing their manufacture after contact with the whites. He also contends that the very small hole in the base of the pipe which serves as a stem hole would require a steel or iron drill. Such holes were too long, too small in diameter, and too straight to have been produced by any means available to Indians prior to white contact.

West completely disagrees with the opinion of McGuire. West considers that the monitor pipe was made and used in the eastern United States centuries before white contact. He finds no marks of manufacture on such specimens which could not be attributed to sandstone scratches. He points out that in the manufacture of monitor pipes the stem hole was drilled early in the process of making, before the base had been finished, thus greatly diminishing the chance of damage during manufacture. Also, those specimens which were broken in drilling were discarded and were never formed. (Such specimens have been found.) He also points out that long stem holes of small diameter could have been drilled with rods of native copper, such rods being well within the ability of Indians to acquire without the aid of white men.

It would appear, therefore, that this very interesting specimen, of itself, can be of but little service in determining the identity of the builders of Site No. 16.

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[1] West, George A., 1934, p. 156.

[2] Mills, William C., 1916, p. 105.

[3] McGuire, Joseph D., 1899, p. 512.

SITE No. 17.—LEA FARM VILLAGE AND MOUNDS

The Charles Lea farm lies on the east bank of Clinch River about 6 miles south of Clinton, Tenn. It is situated on a hill about 40 feet above the level of the river. This particular site, an ancient village and three earth mounds, lies about 800 feet east of the Clinch River. It is probable that at one time the river was much closer to the site than at the present time. It probably flowed in the valley which is now occupied by the tracks of the Louisville & Nashville Railroad. From the terrain it appears that at high water the river was at times not more than 200 feet from the mound area. The village and the mounds lie on the crest and eastward slope of a hill, covered with a fertile red-clay soil, which has long been in cultivation. The surrounding country is mountainous, and most of it is heavily wooded.

VILLAGE SITE

A superficial examination of the site showed that a large part of the cornfield lying within a fenced area was an ancient village. Inasmuch as the owner desired to plant the field in corn, and since the mounds were on the edge of the field and partly within an old orchard, it was found desirable to investigate the village site first.

Figure 57 shows a detail of the trenches in the village site and the location of features discovered. If time had permitted it would have been desirable to have completely excavated the whole fenced area of the cornfield lying northwest of the mound area. The early approach of the corn-planting season compelled the discontinuance of trenching in the open field. Abundant evidence was obtained, however, of the existence of a rather extensive village northeast of the mound area. The present high fertility of this area and its selection by early settlers for cultivation is probably due in no small part to the heavy covering of midden material deposited on this hillside by the people of the ancient village. Special features are listed numerically in the order found and locations are given by numbered trenches shown on the base plat, figure 57.

In trenching, the humus layer, about 12 inches thick, was removed down to the hardpan in trenches usually 12 feet wide. The hardpan surface was troweled or sheared off with sharp shovels after careful removal of the humus layer to permit a search for post molds or any other disturbance, as shown in plate 95, *b*.

SPECIAL FEATURES

Feature No. 1.—In the main north trench, and 19 inches below the ground surface, a shallow pit filled with shells, ashes, pottery, etc., was found. The pit was oval in shape, 4 feet wide and 13 feet long, and extended through the humus layer into the hardpan. The hardpan had been scraped out to a depth of 5 inches in order to form this pit. The midden deposit, which was 14 inches in depth, contained mussel shells, pottery fragments, including broken pieces of a painted vessel, fragments of animal bones, and some small pieces of mica.

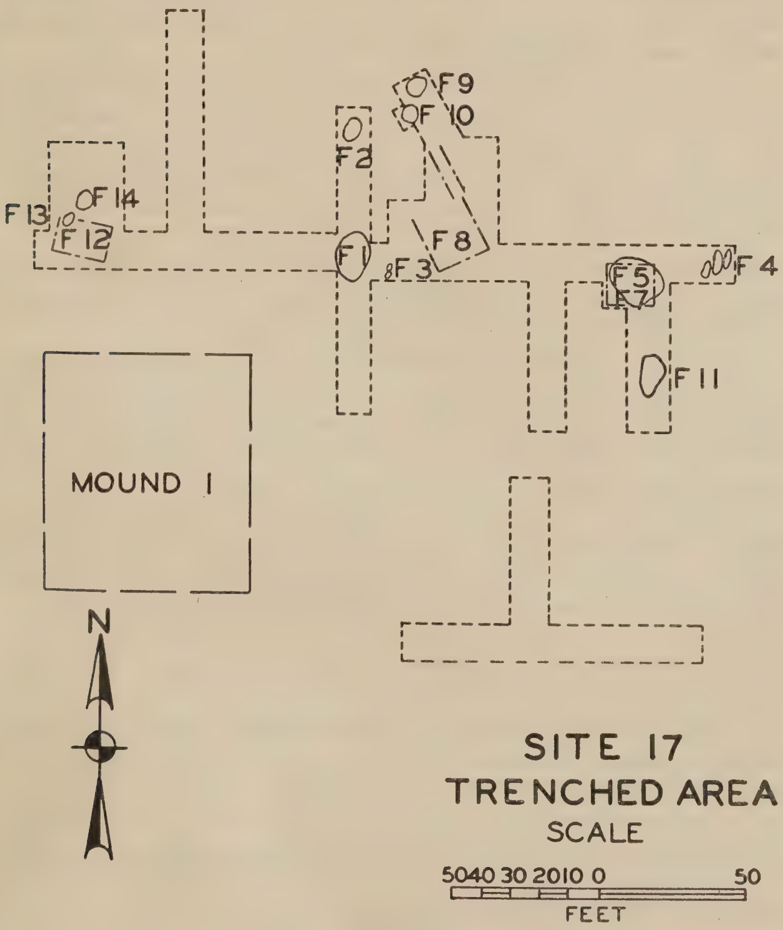
F 9
F 10
F 2
F 14
F 13
F 12
F 1
F 3
F 8
F 5
F 7
F 4
F 11
MOUND 1
N
SITE 17
TRENCHED AREA
SCALE
50 40 30 20 10 0 50
FEET

FIGURE 57.

Feature No. 2.—This was a circular pit filled with ashes, which was found in the trench, as shown in figure 57. The pit was 33 inches wide and 36 inches long. It extended into the hardpan for 13 inches. The bottom of the pit was 19 inches below the ground surface. The pit contained ashes and the usual midden refuse, in which was found a shell spoon.

Feature No. 3.—East of Feature No. 1 a circular depression 16 inches in diameter was found. It was cut down 6 inches into the hardpan and contained fire-cracked stones.

Feature No. 4.—At the extreme east end of the main trench a shell midden was found. This midden deposit was 9.7 feet long and 4.2 feet wide, with an interior depth of 15 inches. When the deposit was cleared away it was found to rest on three separate pits, arranged side by side. The one farthest to the east was 5 feet long, 34 inches broad, and 16 inches deep. To the west of this there was a pit 5 feet 4 inches in diameter and 15 inches deep. At the west end of the group there was a pit 4 feet long, north and south, 3 feet 4 inches wide, east and west, and 15 inches deep.

Feature No. 5.—West of Feature No. 4, in the main north trench, a shell-midden deposit was found. It was 13 feet long, 8 feet wide, and 16 inches in vertical thickness. The bottom of this deposit was 21 inches below the surface of the field. Pottery sherds, bone awls, and shell spoons were found in this midden heap.

Feature No. 6.—This was a carefully constructed circular fire pit made of hard-baked clay, as shown in plate 92, *a*. The pit was 21 inches in outside diameter and 5 inches deep inside. It was inside of Feature No. 7 and was doubtless definitely associated with it.

Feature No. 7.—Under Feature No. 5 was a post-mold pattern, shown in plate 92, *b*. The pattern indicated a structure 13 feet wide and 17 feet long, which was oriented as shown in the plat of the site. Shell-midden material had been deposited above the remains of the structure. Traces of burned cane were found on the floor of the structure. The floor was hard-packed and well-defined. It lay 12 inches below the hardpan. Individual post molds, from 3.5 inches to 5 inches in diameter, extended 12 inches into the hardpan. Figure 58 is a ground plan of the system of molds and shows an orientation of walls along the cardinal directions. Plate 94 shows the structure pattern containing Feature No. 5 in association with Feature No. 11.

Feature No. 8.—In the central section of the north trench a post-mold pattern outlining a structure was found. The pattern, shown in plate 93, *a*, indicated a structure 16 feet in width by 18.5 feet in length. The northwest side was not found. If it ever existed it had been destroyed. Scattered molds to the northwest indicated other

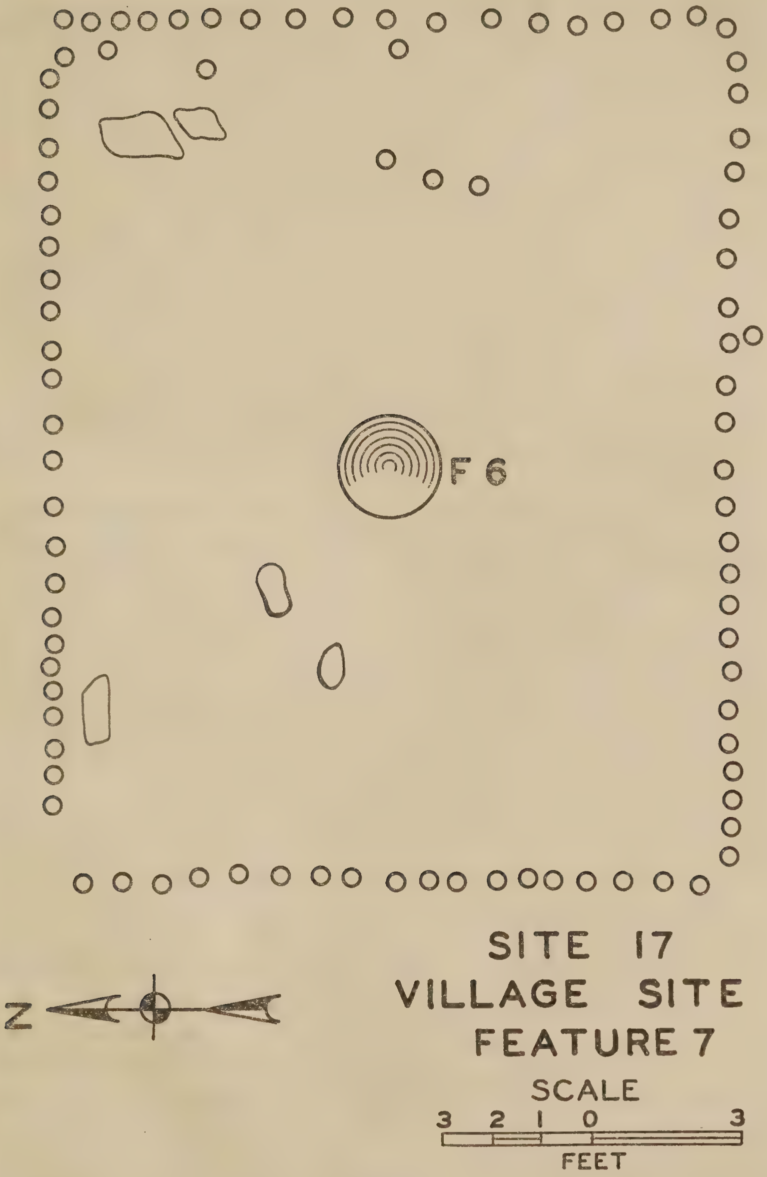
F 6
SITE 17
VILLAGE SITE
FEATURE 7
Z
SCALE
3 2 1 0 3
FEET

Figure 58.

and perhaps later construction on this site, which may account for the incompleteness of this post-mold pattern.

Feature No. 9.—A midden pit 5 feet in diameter and 12 inches thick was found in the extreme north end of the trenched area as shown in the ground plat, figure 57. A considerable portion of the midden was of mussel and periwinkle shells. There were some animal bones and a few potsherds were also found.

Feature No. 10.—South of Feature No. 9 in the trench was a pit 46 inches in diameter at the surface of the hardpan and 59 inches in diameter at the bottom. It was 27 inches deep. This pit was found filled with village-site rubbish. Its form and use definitely suggested a storage bin, which when emptied of its storage of food-stuff had been filled with refuse from the village surface in some ancient "clean-up" campaign.

Feature No. 11.—An ash pit in the southward extension of the main trench was 9 feet by 7 feet and 5 feet deep. This pit was filled with ashes in which one discarded broken celt and many potsherds were found.

Feature No. 12.—Near the west end of the main trench was a post-mold pattern indicating a structure 16.8 feet by 11 feet, oriented as shown in the ground plat, figure 57. The posts had been set in trenches. The south line of molds was partly missing. Associated with this structure was Burial No. 1 and Features No. 13 and No. 14. A plat of this feature is shown in figure 59.

Feature No. 13.—This was a shallow midden pit 37 inches in diameter, extending 9 inches into the hardpan. This pit was located in and associated with Feature No. 12, as shown in plate 93, *b*. The pit contained animal bones, shell spoons, and potsherds.

Feature No. 14.—This was a circular pit for storage. It is also shown in plate 93, *b*. It was cut 4 feet into the clay hardpan with the bottom 4.5 feet below the ground surface. The top of the pit was 44 inches in diameter at the hardpan surface and 48 inches in diameter at the bottom. The pit was filled with village refuse which contained potsherds, mussel shells, animal bones, and some well-worked shell spoons. An infant burial was found.

Burial No. 1.—Associated with Feature No. 12, and shown in plate 93, *b*, was the burial of an adult male. This burial was fully flexed, as shown in plate 95, *a*. The grave was oval-shaped, 40 inches long by 24 inches wide and 6 inches deep. It was made on the floor of the structure which enclosed it. Thirty-four inches east of this burial an effigy pipe, shown in plate 105, *a*, was found. Its intentional association with Burial No. 1 may be doubtful, but being so near to the ground surface its position may have been disturbed.

Mound No. 1

Mound No. 1 was located on the western edge of the cornfield, adjacent to the old orchard. The mound was built over a humus layer which showed everywhere evidence of former occupation as a village site. Under the mound and in the humus layer were postmold patterns of dwellings, fireplaces, ash beds, shell deposits, etc. In excavating a level floor was maintained 6 inches below the hardpan and vertical profiles were kept clean to enable a watch to be kept for

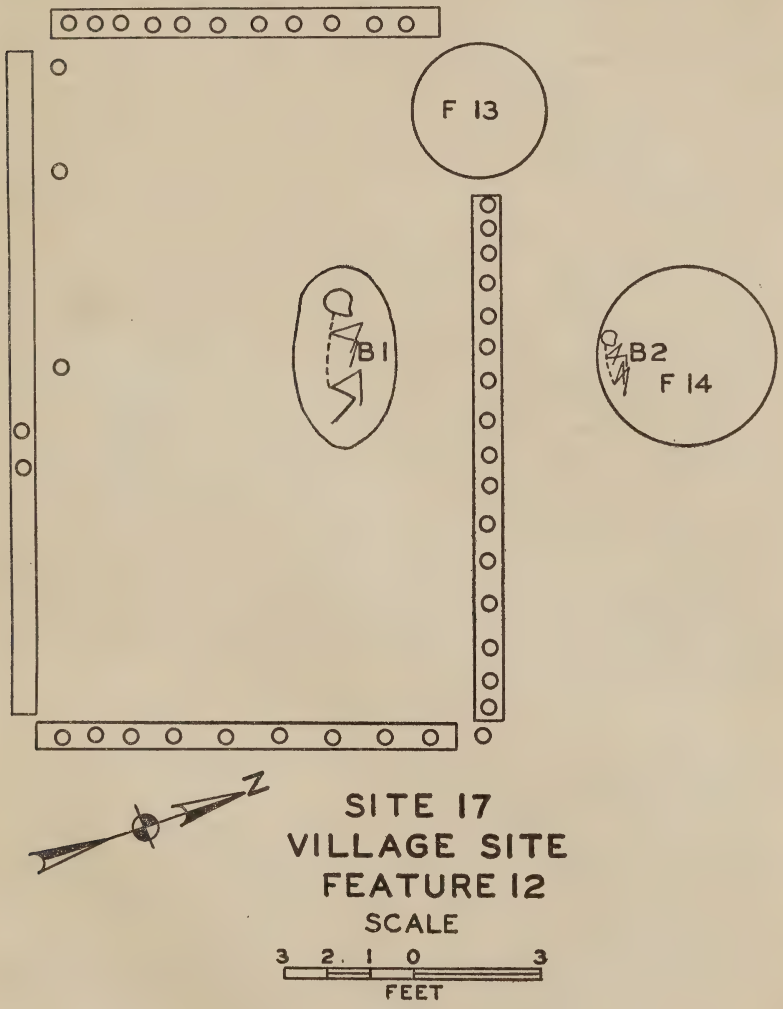
F 13
B1
B2
F 14
N
SITE 17
VILLAGE SITE
FEATURE 12
SCALE
3 2 1 0 3
FEET

Figure 59.

any intrusion. The mound was built of red and yellow clay mixed with patches of dark humus. A hard-packed clay floor was found 17 inches above the humus layer. Above this packed floor and at the center of the mound there was about 30 inches of made earth-clay mixed with humus. The construction of this mound by the carrying up of small loads of earth from different sources was evident in any vertical profile. Clays—red, brown, and yellow—and black humus were so mingled on this site that the size of each load could easily be estimated. The mound had been in cultivation so long and the top had been so much eroded that it was impossible to form any exact idea of its original size. It was staked off 80 feet east and west and 70 feet north and south. This area was cleared. Later the area was extended to include a 10-foot strip to the east, so that the area excavated was 90 feet by 70 feet.

The very definite hard-packed clay floor was found to extend under a large portion of the mound, but no post-mold pattern was found in definite association. It is possible that the structure here, if any had existed, was so large that the post molds at the boundary had been destroyed by erosion, or by the cultivation of the soil. The floor had a hard surface in the center, with an oval ridge about the edge, as shown in plate 96, *a*, which is a view from the northwest of wall 4.0–4.7. In this picture the floor is shown as extending outward from under the vertical wall. On the southeast side of this floor there was a large depressed portion of the floor which extended toward the southeast edge. Here the floor dropped off to a level about 12 inches lower than the upper level. This is shown in plate 96, *b*, which is a view from the southeast of wall 4.0–4.7, with the edge of Feature No. 2 just making its appearance.

SPECIAL FEATURES

The special features of this mound are numbered serially and described in the order found.

Feature No. 1.—On the original ground surface below the mound there was a small pile of stones broken by fire action. They lay in an area about 65 inches by 40 inches and were surrounded by nine well-formed post molds, irregularly arranged.

Feature No. 2.—Near the center of the prepared floor was a square altar of unusual form. It was 9 feet north and 7 feet west of stake 5.3. This altar was built of a white clay laid on the red-clay floor. The red clay had been excavated to a depth of some 7 inches in a square about 60 inches on each side. The white clay was placed in the excavation and raised to a flat surface 2 inches above the floor level. In the center of this 5-foot square a quadrangular depression 5 inches deep, with convex sides, formed a fire basin. This altar is shown in plate 134, *b*. At the corners of the square the convex sides of the basin were carried toward the corners by excavating the clay along a diagonal of the square and building up ridges on either side above the altar surface.

It is believed that the purpose of this construction was to permit the holding of the ends of four logs together in a central fire. Each log was kept at all times at right angles to its neighbor. The diagonals of this altar very exactly coincide with the cardinal directions, the east-and-west direction being shown by the lines of stakes used in excavation. Such an altar would hold four logs north and south and east and west, which would prevent any rolling out of position while burning. This altar, when uncovered, showed unmistakable evidence of intentional damage before being covered over. The action of a heavy blunt implement used to beat down a portion of one side and one corner was clearly discernible. Except for this seemingly intentional damage to the construction, the preservation was excellent. The white clay had been smoothed and well baked by fire action. The superincumbent earth was easily separated from it. The condition in which this altar was found definitely suggested a ceremonial breaking or "killing" before it was covered over. The position of this feature is shown on plat of the excavated area of Mound No. 1, figure 60.

Feature No. 3.—On the southeast side of the prepared clay floor, as shown in ground plat, figure 61, a post-mold pattern indicating a rectangular structure 25 by 16.5 feet was found. This structure had near its center a very well made circular fire basin 16 inches in diameter and 2 inches deep, which was made of hard-burned clay, set on the original hardpan. This structure and the central fire basin were believed to represent a dwelling which was a part of the large village that covered this area and antedated the building of the mound. The southwest side of this structure seemed to be of irregular construction, the post molds varying in size, and being irregular in placement, as shown in plate 97, *a*.

Feature No. 4.—At stake 3.1 an area of 6 by 6 feet on the original ground surface had a circular arrangement of post molds surrounding a slightly elevated portion of the hardpan floor, as shown in plate 97, *b*. These post molds were made by small posts about 2.5 inches in diameter and may represent a crib or storage bin built on the old village floor prior to the erection of the mound.

Burial No. 1.—North of stake 6.6 the partially flexed burial of an adult female was found. The preservation was very poor. This burial was 27 inches below the ground surface and 26 inches above the mound floor. The body was placed face down, with the head to the southeast. The knees were flexed. One hand was on the shoulder and one was at the hip on the left side. The burial pit was an oval 3.3 feet by 29 inches. A small pottery vessel placed at the knees was badly broken. There was one small hammerstone near the face and two small pots under the head. One of these pots was sitting on the other. Both were whole but cracked. Beside the pots was a shell hoe, rectangular in shape, with rounded corners.

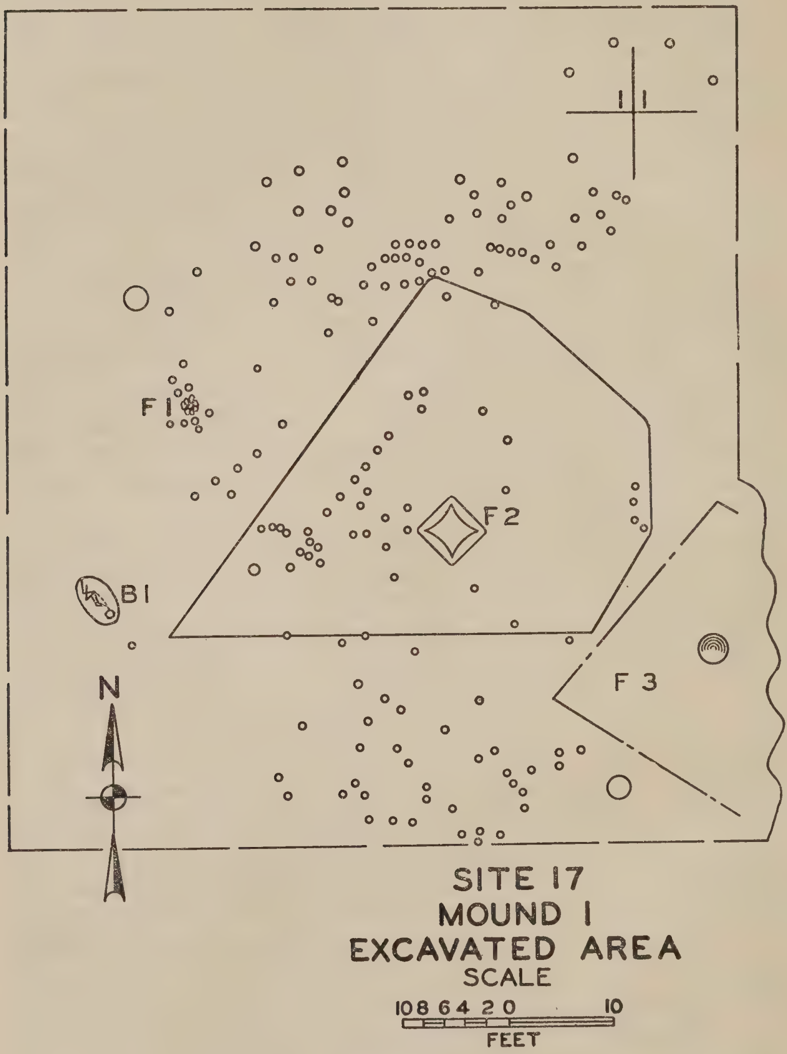
F 1
F 2
F 3
B 1
N
SITE 17
MOUND 1
EXCAVATED AREA
SCALE
10 8 6 4 2 0 10
FEET

FIGURE 60.

Burial No. 2.—An infant burial, deposited in a midden pit and covered with midden refuse which contained animal bones, pot-

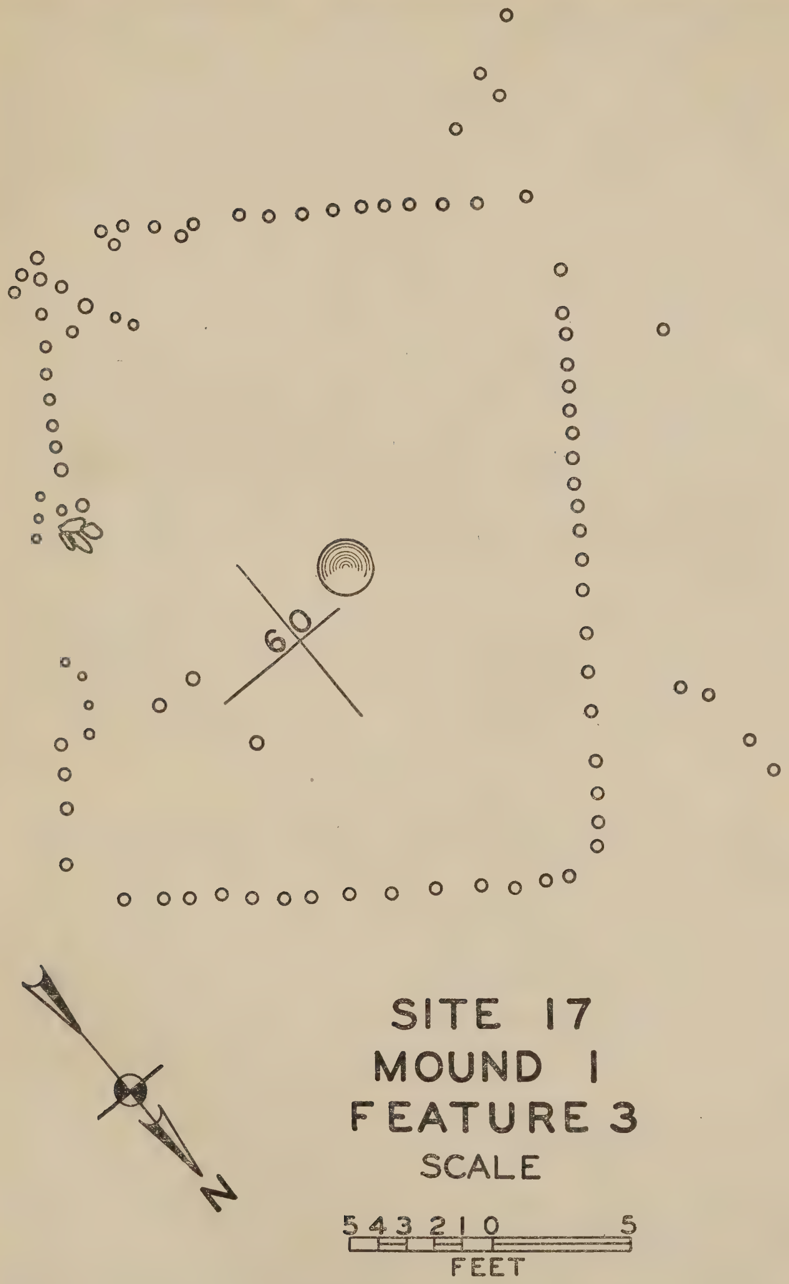
60
N
SITE 17
MOUND 1
FEATURE 3
SCALE
5 4 3 2 1 0 5
FEET

FIGURE 61.

sherds, and shell was found at stake 6.2. The burial was 26 inches below the ground surface.

Mound No. 2

Mound No. 2 lay in the old orchard, at the edge of the cultivated field. It was heavily wooded with sassafras, elm, and sweet gum. On the northern edge of the mound stood one large poplar tree, which the owner reserved from cutting. The mound was circular and constructed of clay-loam and sand.

A secondary floor was 38 inches beneath the apex of the mound. It was poorly preserved. Some years ago a potato cellar had been dug into the mound near the center. This cellar showed as a depression in the mound top. The cellar penetrated the secondary floor near the middle. If there had been any structures or fireplaces on this floor they would have been destroyed by such excavation. The mound was built of varying grades of clay, loam, and sand. Predominant was a heavy red clay, seen in cross section as many small lenses. The sand was clean, white, and fine-grained—a typical river sand.

The primary floor was of small extent and obviously precedent to the mound. It was probably associated with the original village site. Like all earth mounds, erosion prevented a determination of the size of the mound, but it was staked off, 70 by 70 feet, and excavated in 10-foot trenches from the outer edge of the area.

Special Features

Feature No. 1.—A cache of nuts, charred chestnuts, and chinquapins was found at stake 4.6 on the original ground surface.

Feature No. 2.—A broken pottery vessel, with a pile of charred corn, was found at stake 2.4 on the original ground surface.

Feature No. 3.—The secondary floor, a definite feature of this mound, was about 34 feet square. It was a sandy floor, burned and hardened in some areas. This floor, well defined in certain areas, certainly was surmounted by a structure. A few of the post molds were found. Next to these molds a few fragments of charred wood were found. In one mold was found the stub of a post, charred to the floor surface, with the empty hole beneath, where the butt end of the post had rotted away. Feature No. 2 was found beneath this charred wood, which may account for the breaking of the pot and the charring of the corn.

Feature No. 4.—The structure, which was associated with the secondary floor, was 47 feet by 45 feet, shown by plat, figure 62. These post molds were small, as shown in plate 98, *a*, none of them over 3 inches in diameter. They extended into the floor to a uniform depth of 18 inches. The lines of the molds were not straight but somewhat irregular. The secondary floor sloped down sharply to these lines of post molds on all sides. The sloping sides, or ramps, are shown in plate 98, *b*. The secondary floor had been removed, leaving only narrow walls to mark its elevation. A portion of the ramp on the southeast showed how the surface came down to the line of post molds. The presence of a large poplar tree, referred to above, on the northwest edge of the mound, prevented the excavation from completely uncovering this portion of the structure pattern.

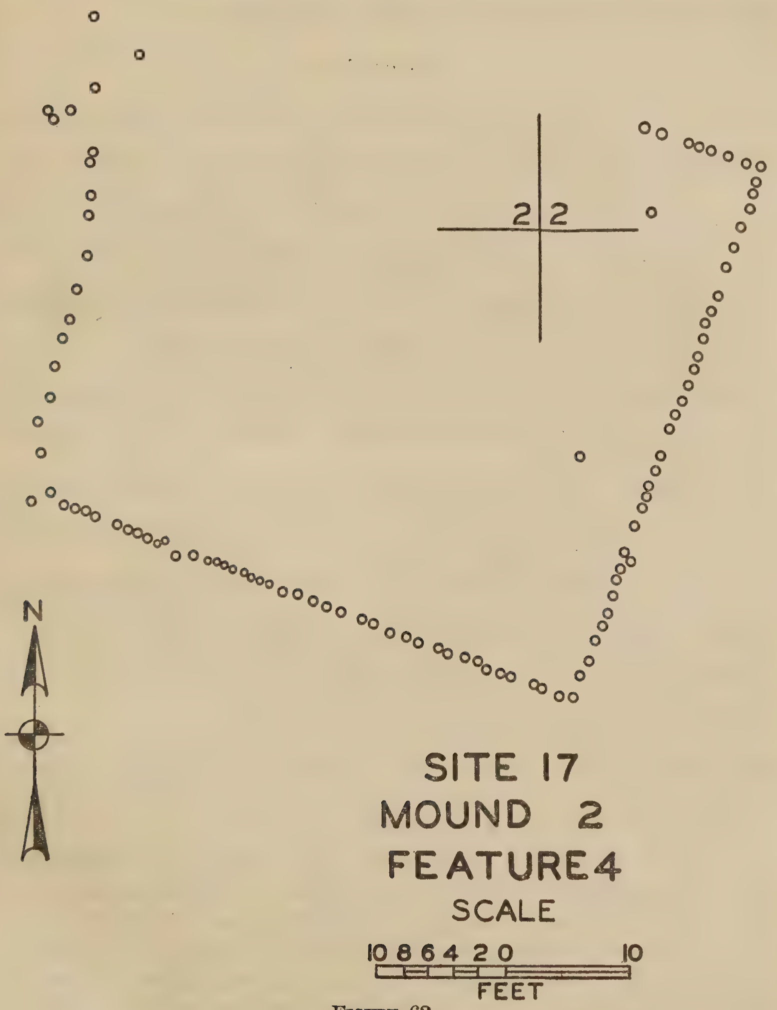

FIGURE 62.

Upon completion of the excavation of the mound a dark humus layer, uniformly 9 inches thick, was found under the entire mound. This was regarded as the primary floor, since there were patches of hard-clay floor directly over the humus layer. There were, however, no post molds associated with this floor. The humus layer contained the usual evidence of an old village site.

Mound No. 3

Mound No. 3 is the most westward member of the group of three mounds at this site. It is on the highest part of the hill, and is nearest to Clinch River, being about 800 feet east of the river. It was at first not recognized as a mound, but was regarded as a natural elongated ridge, the highest portion of the hill, the east side of which showed considerable erosion. It was heavily covered with small trees and undergrowth, and a surface inspection was impossible. After work was well started on other mounds on this site and their nature was revealed, it was apparent that they were erected on an extensive village site. For this reason it was doubted that this westward ridge was a natural formation. It was cleared of brush and trees.

A trench 5 feet by 30 feet, which was put down in the edge of this ridge, revealed mixed earth with a trace of potsherds to a depth of 5.5 feet. At this depth the humus was encountered.

The humus, which was mixed throughout with a considerable quantity of potsherds, shell, and flint chips, extended to a depth of 10 inches. Upon this evidence it was decided to chart this ridge as Mound No. 3. It was therefore staked in the usual 10-foot squares for excavation.

The area selected for excavation was southwest of a stake designated 0.0. This rectangular area extended 90 feet to the south and 60 feet to the west of the stake. Whole numbers were used to designate blocks north and south, while decimals were used to designate squares east and west. The shape of the original made-earth mound could not be determined by a superficial investigation, and it was later found necessary to extend the staked area 40 feet to the east. These stakes were designated by "primes." A plat of the area excavated is shown in figure 63. On the plat are shown the positions of the various features which are designated by number. They are here listed and described in numerical order.

Feature No. 1.—A baked-clay fire pit, circular in form, was found at a depth of 9 inches. It was 18 inches in diameter and 7 inches deep, and was located southwest of stake 4.2.

Feature No. 2.—Fire rocks associated with potsherds were found southwest of stake 6.0 at a depth of 11 inches. The rocks were seemingly placed to form a fireplace and were resting in ashes.

Feature No. 3.—Southwest of stake 3.2, and at a depth of about 10 inches, there was found a small area covered with burned cane and grass. This charred material was not in association with any other recognizable feature.

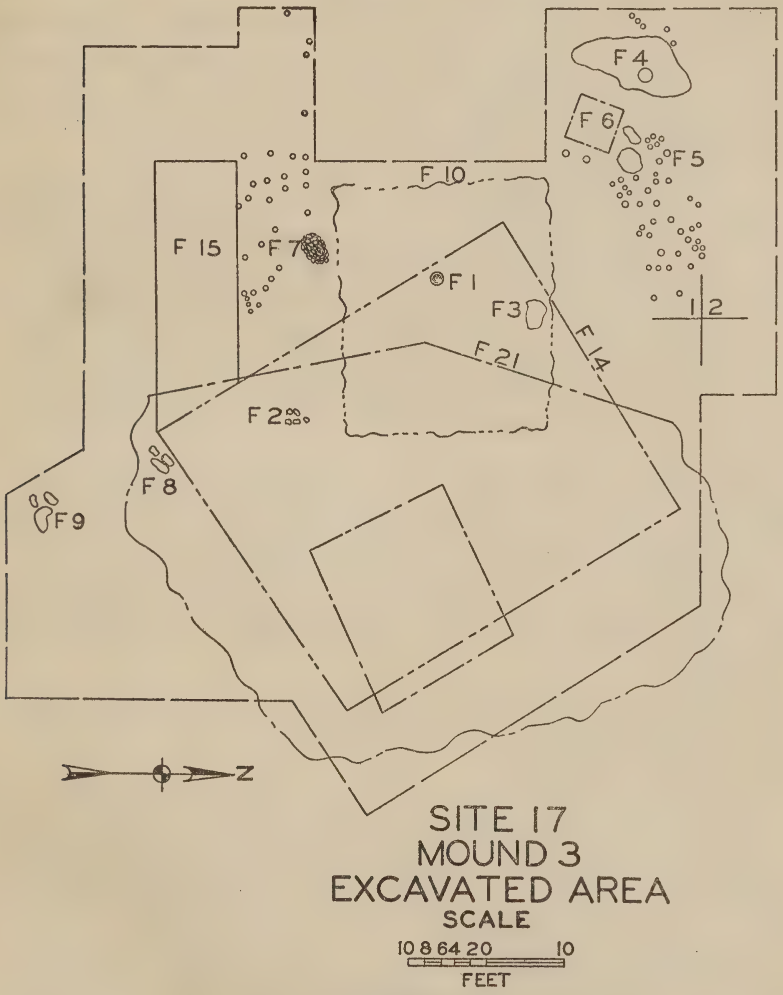
F 4
F 6
F 5
F 10
F 15
F 7
F 1
F3
F 14
F 21
1 2
F 2
F 8
F 9
N
SITE 17
MOUND 3
EXCAVATED AREA
SCALE
10 8 6 4 2 0 10
FEET

FIGURE 63.

Feature No. 4.—This feature was found at a depth of 5 feet. It consisted of a rock pile containing potsherds, bone, and shell in association. A post mold 36 inches in depth and 18 inches in diameter was found beneath the rock near the center of the feature.

Feature No. 5.—This feature was a pattern of post molds 6 feet 4 inches by 6 feet, which appeared at a depth of 6.2 feet in the hardpan, as shown in plate 99, *a*. Associated with the mold system were a burned area, an ash pit, and a nut stone.

Feature No. 6.—This feature was a burned structure on the clay floor of the mound. This structure lay on the hardpan floor, except the northwest corner, which was some 6 inches below the surface of the hardpan. This structure had been covered over by burned clay and burned thatching. The clay lay above the thatching.

In the northeast corner of the structure there was a pile of small, irregularly placed stones in which were mixed potsherds, shell, and burned thatching. The post molds here indicated that the walls of this small structure contained posts about 2½ inches in diameter. The smallness of this structure, the evidence of fire, and the further fact that this small structure had a clay covering over the thatch (supported by poles) strongly suggests the possibility that this was a "sweat house",[1] the prehistoric approach to a Turkish bath. The ground plan of this post-mold pattern and fire basin of stone are shown in figure 64.

Feature No. 7.—This was a rock pile found at a depth of 6 feet, southeast of stake 6.3. This pile was about 3 feet in diameter and had in association shell, animal bones, and potsherds.

Feature No. 8.—Three large rocks were arranged in the same horizontal plane, northwest of stake 8.0. They were at a depth of 2.5 feet, and seemed intentionally placed. Their purpose was not ascertained.

Feature No. 9.—This was a rock pile with shell and potsherds in association. This pile was 24 by 42 inches, and was 2.5 feet below the surface of the mound.

Feature No. 10.—This was a hard-packed floor about 6 inches below the surface of the mound. An accurate outline of this floor was not determined because of its nearness to the surface and its partial destruction by the plow. No post molds were found associated with this floor, which was especially well defined in some areas. Feature No. 1 was a fire pit on this floor.

Feature No. 11.—This was a circular, baked fire pit, as shown in plate 100. The pit was carefully constructed. It was on the floor of the structure of this mound southwest of stake 4.0 and at a depth of 3 feet 2 inches. The pit was accurately circular in form. It was 68 inches in diameter and 10 inches deep. The outer rim of this basin rose 4 inches above the floor. It was filled with ashes and charcoal when found.

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[1] Lawson, John, 1903, p. 21. Bushnell, David I., Jr., 1919, p. 100.

Feature No. 12.—This was a circular baked fire pit, 48 inches in diameter and 7 inches deep. It was 3.2 feet below the surface of the mound, west of stake 4.1. This pit was filled with ashes.

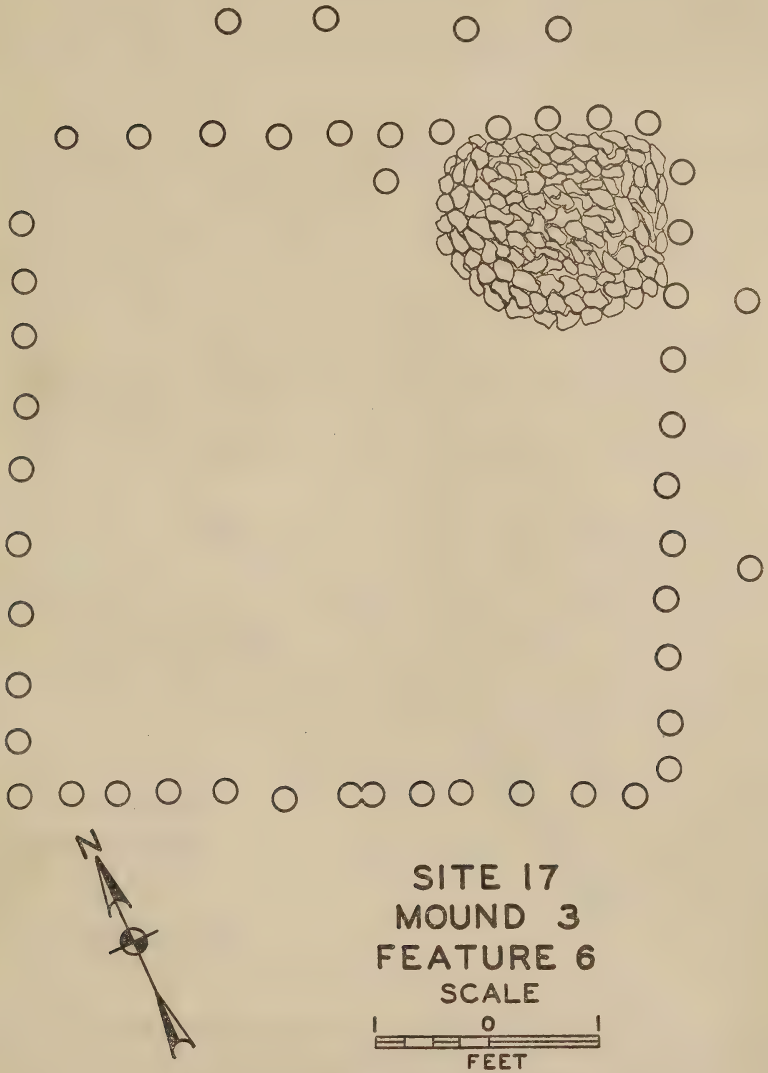


FIGURE 64.

Feature No. 13.—This was a circular baked fire pit, 48 inches in diameter and 6 inches deep, located southwest of stake 5.2 at a depth of 3.2 feet below the mound surface and on the structure floor. The pit was filled with ashes.

Feature No. 14.—This was a hard-packed floor at a depth of 3 feet 2 inches. It was outlined by post molds on three sides. This floor was 45 feet wide and 53 feet long. On the east the floor had been destroyed by erosion. On the floor were three fire pits and six ash pits. These are to be seen in plate 101. The floor, which was made of hard-packed clay, was built on sand raised 4 feet above the hardpan. Features Nos. 11, 12, and 13 were associated with this floor. At the southwest corner of the structure floor there was a clay ramp (Feature No. 15) which ran from the floor level down to the original humus line. This would seem to indicate that at the time of occupation the floor was at a higher level than the surrounding village site. A plat structure pattern is shown in figure 65.

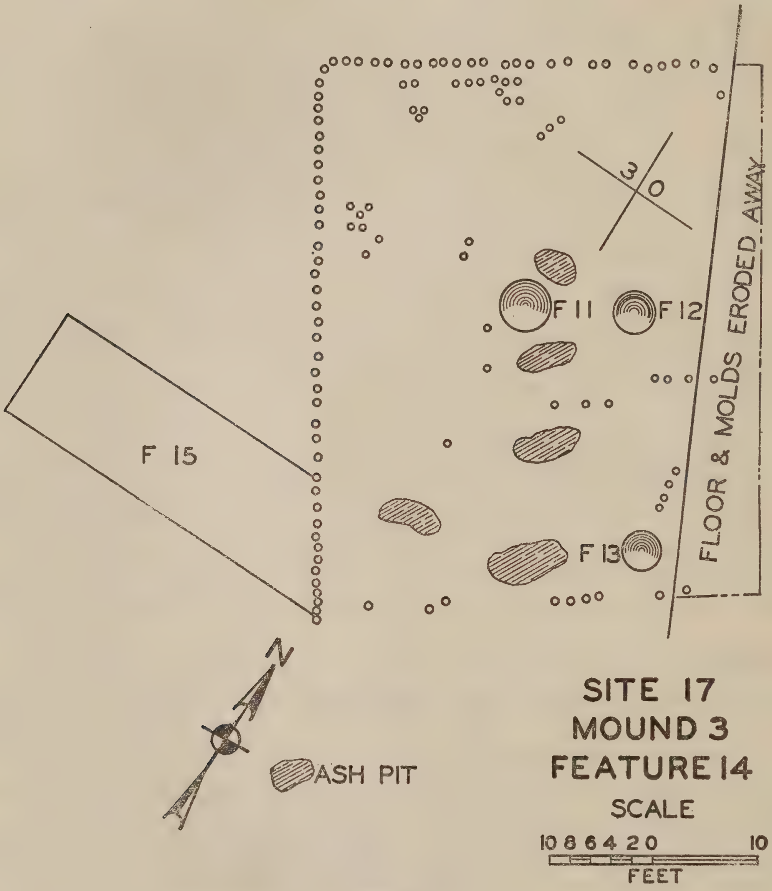


FIGURE 65.

Feature No. 15.—This feature was a ramp of clay, shown in plate 102. It was 35 feet long, and was definitely constructed to give access to the structure floor. The sides of the ramp were somewhat cut down by workmen before its true nature was discovered.

Feature No. 16.—After the floor of Structure No. 1 had been thoroughly investigated, excavation was continued. Immediately another prepared floor, shown in plate 99, *b*, was found at a depth of 1 foot 4 inches below the floor of Feature No. 14. On the floor, southwest of stake 2.1, was a circular fire basin 20 inches in diameter and 3 inches deep.

Feature No. 17.—Southwest of stake 5.0 was a baked-clay fire basin on this third floor level. The basin was very well made, elliptical in form. It was 18 inches wide, 24 inches long, and 2 inches deep.

Feature No. 18.—This was a clay fire basin on the third-floor level, 18 inches in diameter and 2 inches deep. It was southwest of stake 5.2. This basin was filled with ashes. Its preservation was very poor.

Feature No. 19.—This was a circular, baked fire basin, southwest of stake 6.2. It was 24 inches in diameter and 2 inches deep. It rested on the third-floor level.

Feature No. 20.—This was a circular baked-clay basin, southwest of stake 6.3. This basin was 24 inches in diameter and 2 inches deep. It was badly broken.

Feature No. 21.—This was a clay floor at a depth of 4 feet 6 inches below the mound surface and 1 foot 4 inches below the floor of Structure No. 1. This floor had on it five fire pits and the partial outline of a small structure. The outline of this floor was not traced to its full extent. Excavation failed to extend far enough to the east and south to take in all of the floor in those directions. This mound lay partially in an orchard and the owner, in giving permission to excavate, had reserved several trees from disturbance. The floor extended under these trees and into the area which was not permitted to be excavated. On the portion of the floor uncovered, five fire basins (Features Nos. 16, 17, 18, 19, and 20) were found. Burned grass and charred cane were present on the mound floor. The entire floor showed evidence of having on it burned material. Very little pottery was found between this floor and that of Structure No. 1. The floor was 2.5 feet above the hardpan on the average, and had been raised upon sand.

The floor was cut through to determine if any floors lay below. None were found, but the humus layer under the mound bore all the evidence of an ancient village site. Work was proceeding at this site when the time arrived for closing the archaeological project in the Norris Basin. Had time permitted, it is believed that it would have been possible to have found other rectangular patterns of post molds in the old village site under this mound.

POTTERY

This site is characterized by a relative abundance of sherds of small, thin vessels, as opposed to a dearth of sherds of the larger vessels of coarse texture. Cord-paddle-marked pottery did not seem to have been an important component of the complex on this site. Textile-marked sherds show the usual textile weaves common to other sites of the basin. Round handles on pots of small to medium size are in abundance. The large strap handle does not occur. Round and flat lugs, set either below or on a straight rim, occur in fair abundance, but there is no evidence of pointed rims carrying lugs. Plate 103, *a*, shows a variety of sherds of types mostly rare on this site. Cord band impressions, red on white polychrome, textile marked, and punctate decorations are shown. The last three are shell tempered, but the cord band impressed appears to be sand tempered.

There are shown in plate 103, *a*, two sherds of rectangular stamped design. This ware was abundant on this site. The smaller of these patterns is a square, eight meshes to the inch. The larger pattern is a rectangle three and one-half by four meshes to the inch. It is sand tempered and very uniformly 0.25 inch in thickness. This stamped design was used for small vessels, as shown in plate 103, *b*, which shows two small pots taken from Burial No. 1, Mound No. 1. The larger of these two pots was 5.75 inches in diameter. The stamped design covered the whole pot.

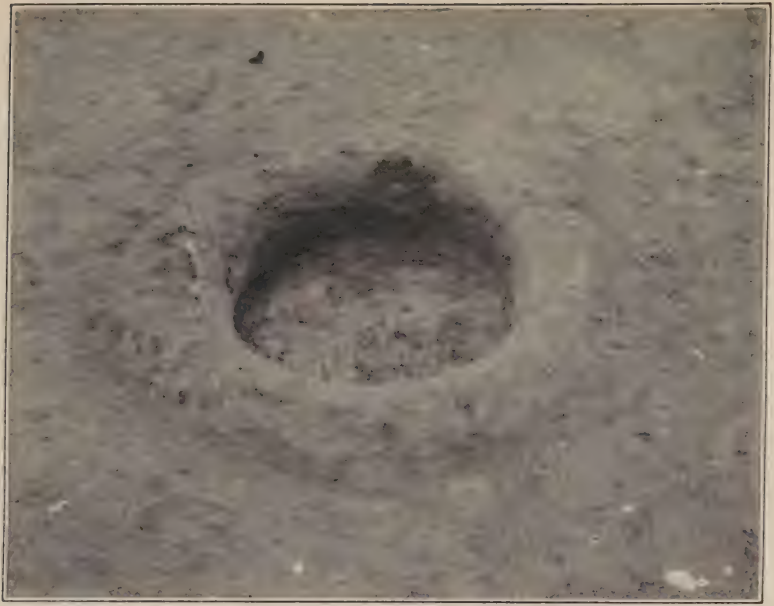
ARTIFACTS

This site yielded a large number of perforated shell hoes, but very few bone artifacts. Arrow points, celts, a quartz ball, and a pottery pipe are shown in plate 104, *a*. Stone disks are conspicuous by their absence. Only two pottery disks were found. In the general digging of the village site the double conoidal zoomorphic pipe shown in plate 105, *a*, was found. It is possible that it was in association with Burial No. 1, but, because it was so close to the surface of the cultivated field, may have been disturbed by the plow. This pipe is of sandstone, roughly cubic in form, and appears to be a crude representation of a frog. Its overall dimensions are 3.3 inches by 2.5 inches by 3.8 inches high. It was rough-pecked into form and showed no polish.

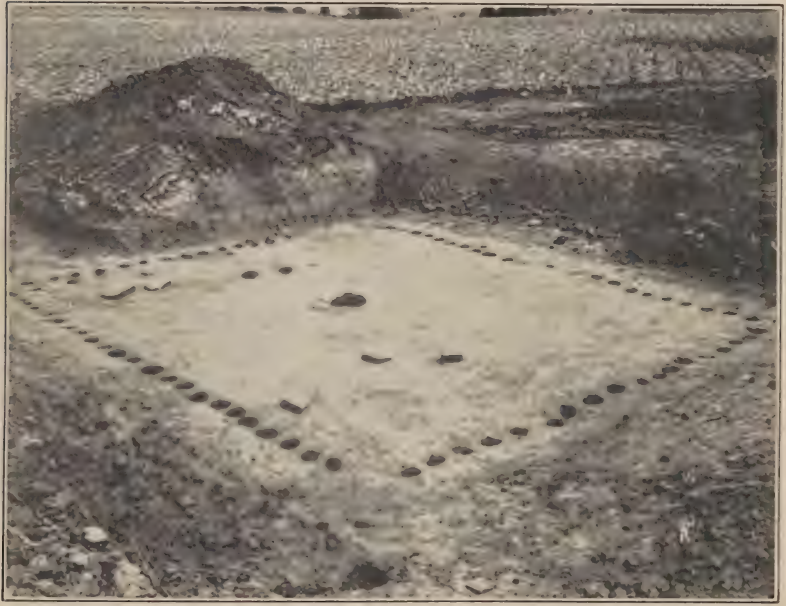
CONCLUSIONS

This site seems to have been an important village in the midst of which at least three locations were chosen for the erection of large earth-covered structures.

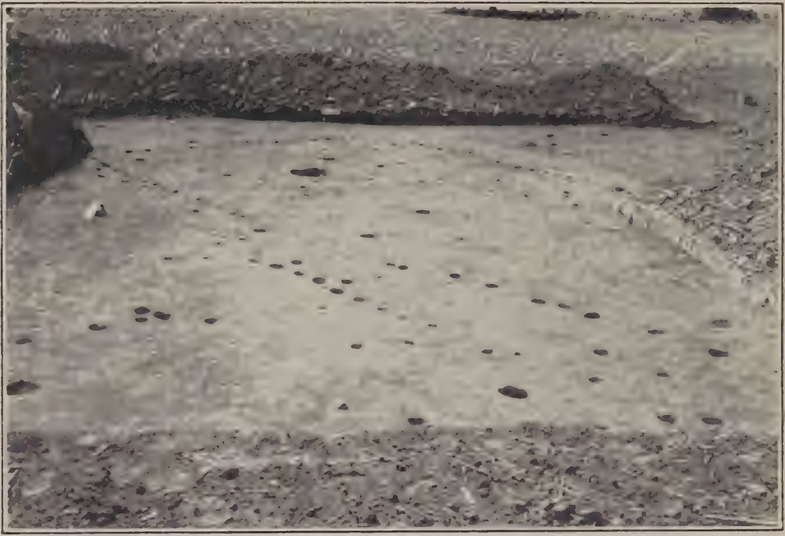
The site appears most closely related to those of the "small-log" type of town-house construction. While it may be thus classified,



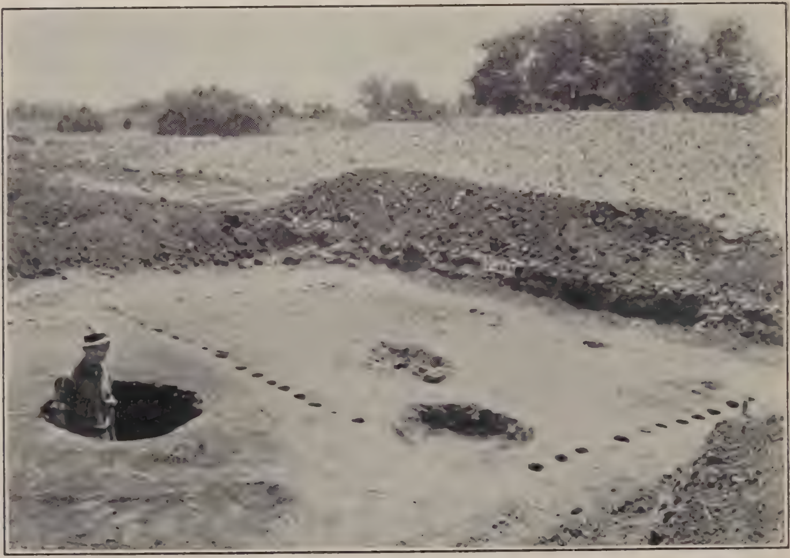
a. Fire pit. Feature No. 6, Site No. 17.



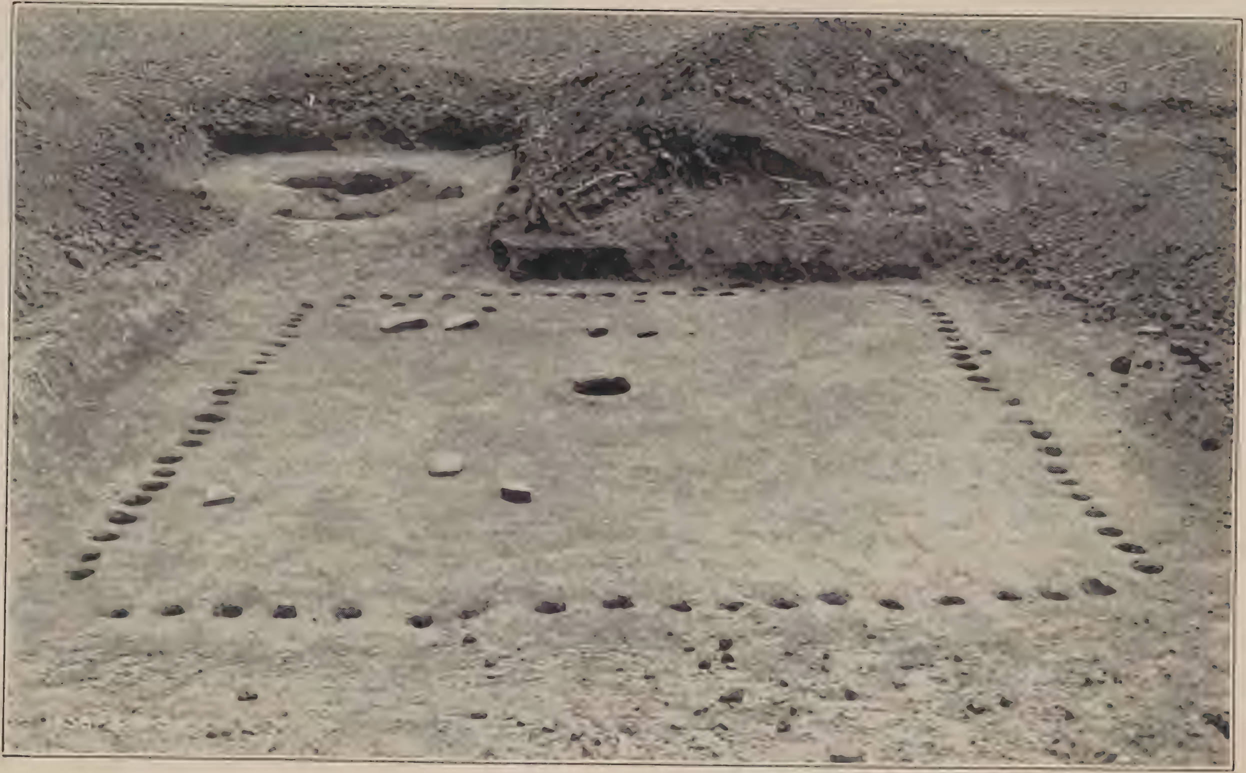
b. Post-mold pattern. Feature No. 7, Site No. 17.



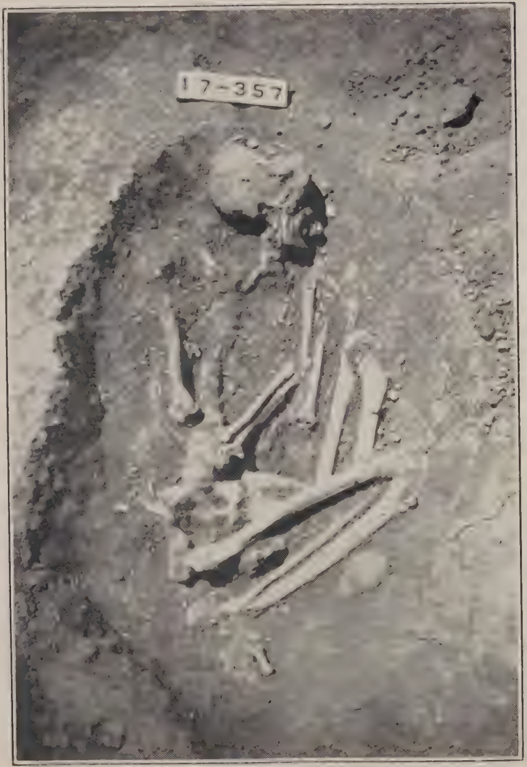
a. Post-mold pattern. Feature No. 8, Site No. 17.



b. Features Nos. 12, 13, 14, and Burial No. 1, Site No. 17.

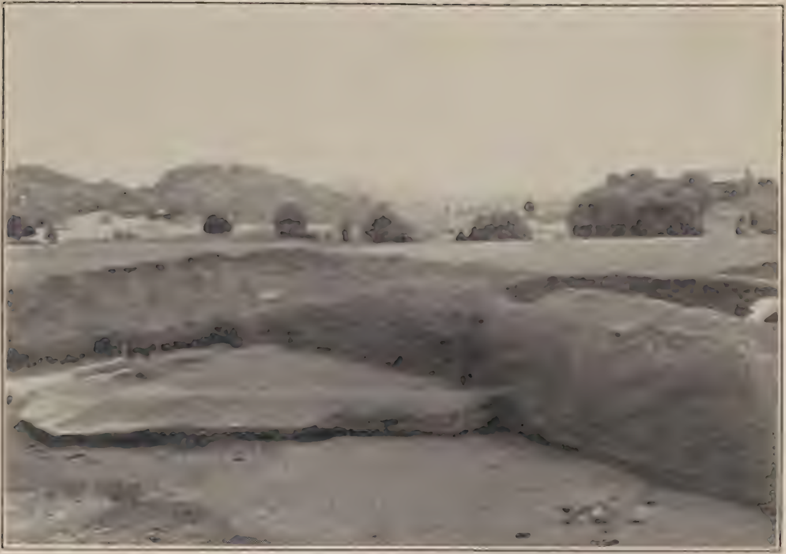


Structure pattern, showing Features Nos. 5, 7, and 11, Site No. 17.

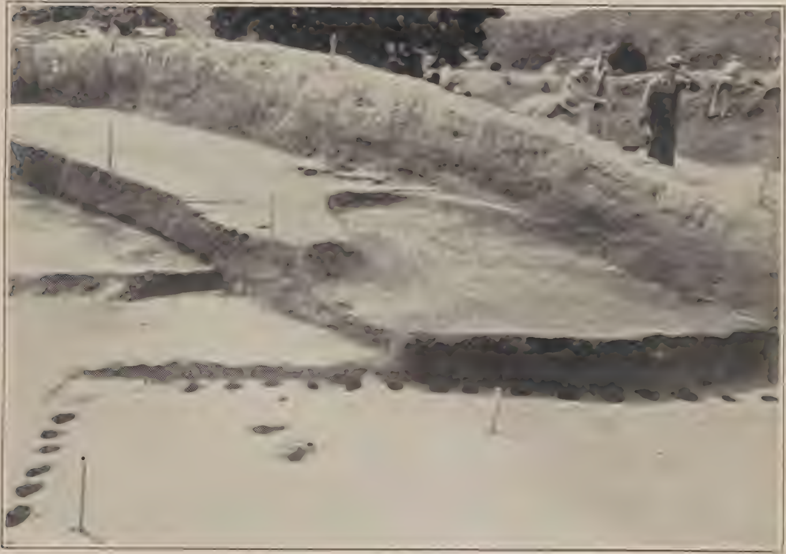


a. Burial No. 1, Site No. 17.

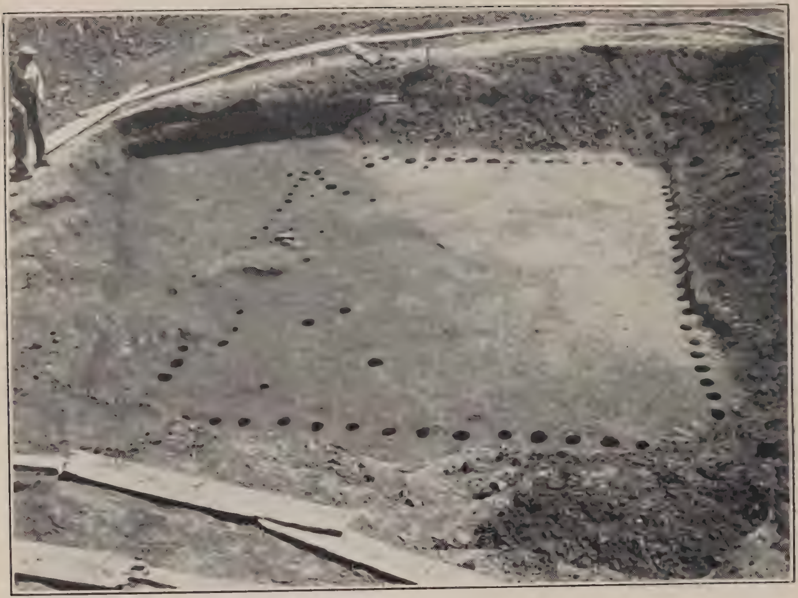
b. Searching floor of trench for disturbed areas. Site No. 17,



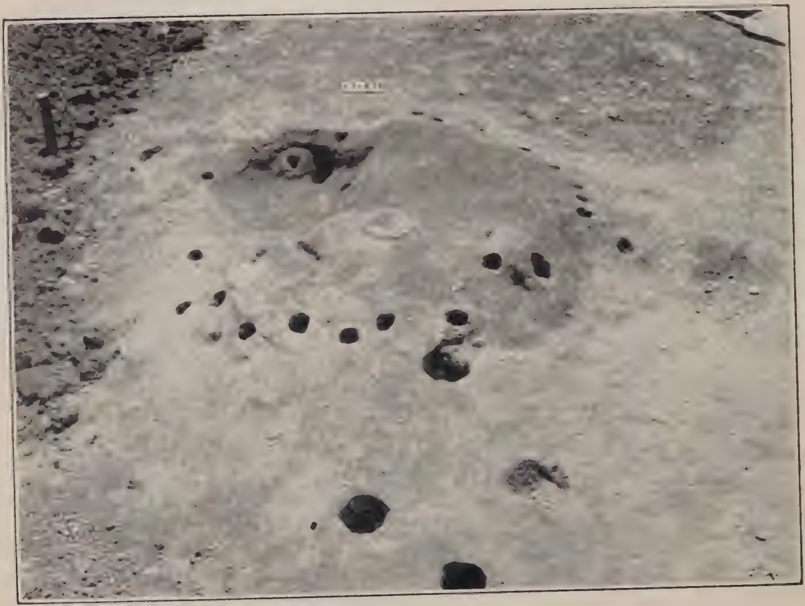
a. Floor with elevated ridge about edge protruding from wall. Mound No. 1, Site No. 17.



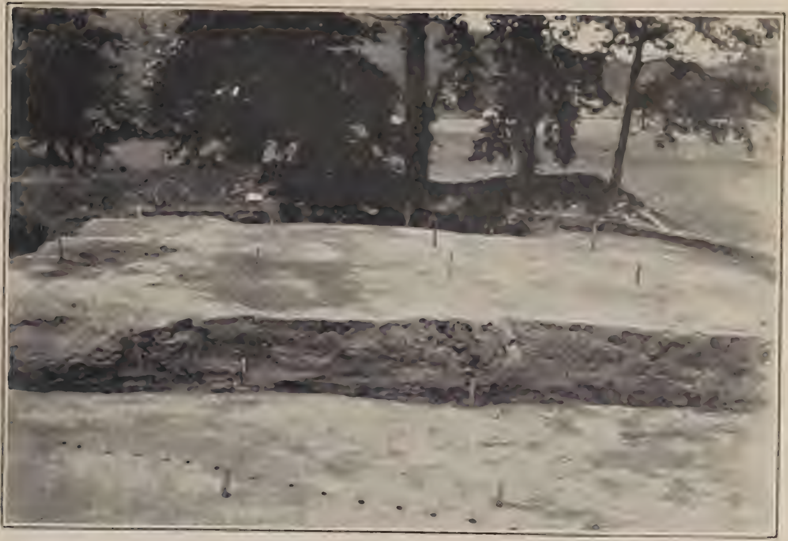
b. Depression in southeast portion of floor. Mound No. 1, Site No. 17.



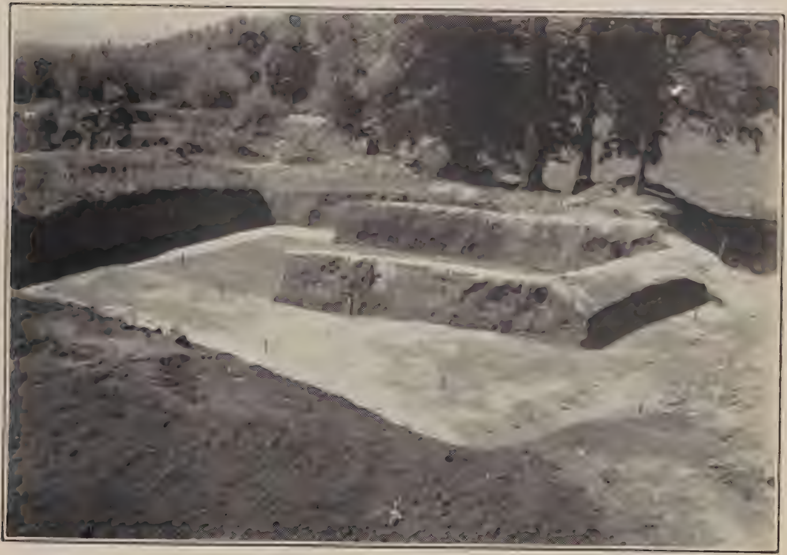
a. Post-mold pattern. Feature No. 3, Mound No. 1, Site No. 17.



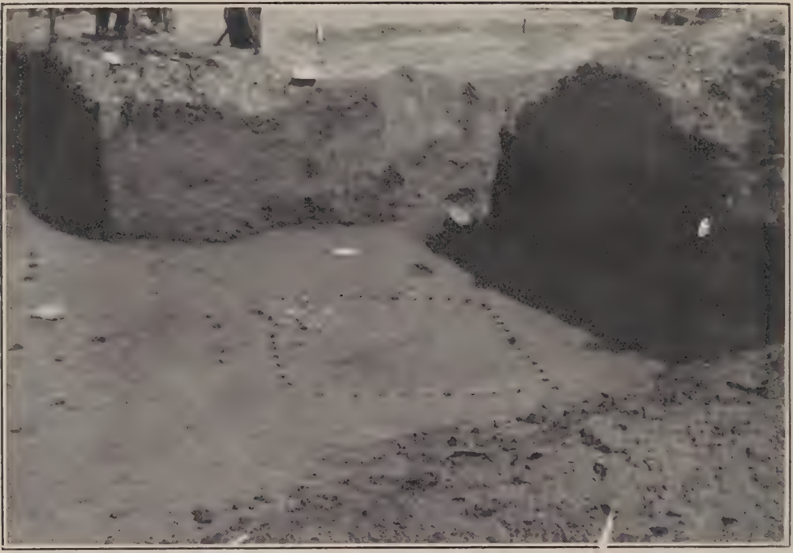
b. Feature No. 4, Mound No. 1, Site No. 17.



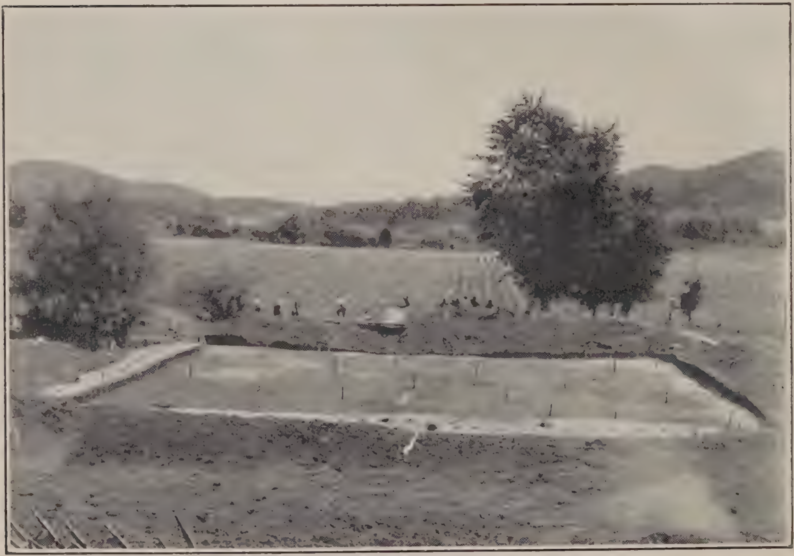
a Post-mold pattern. Mound No. 2, Site No 17.



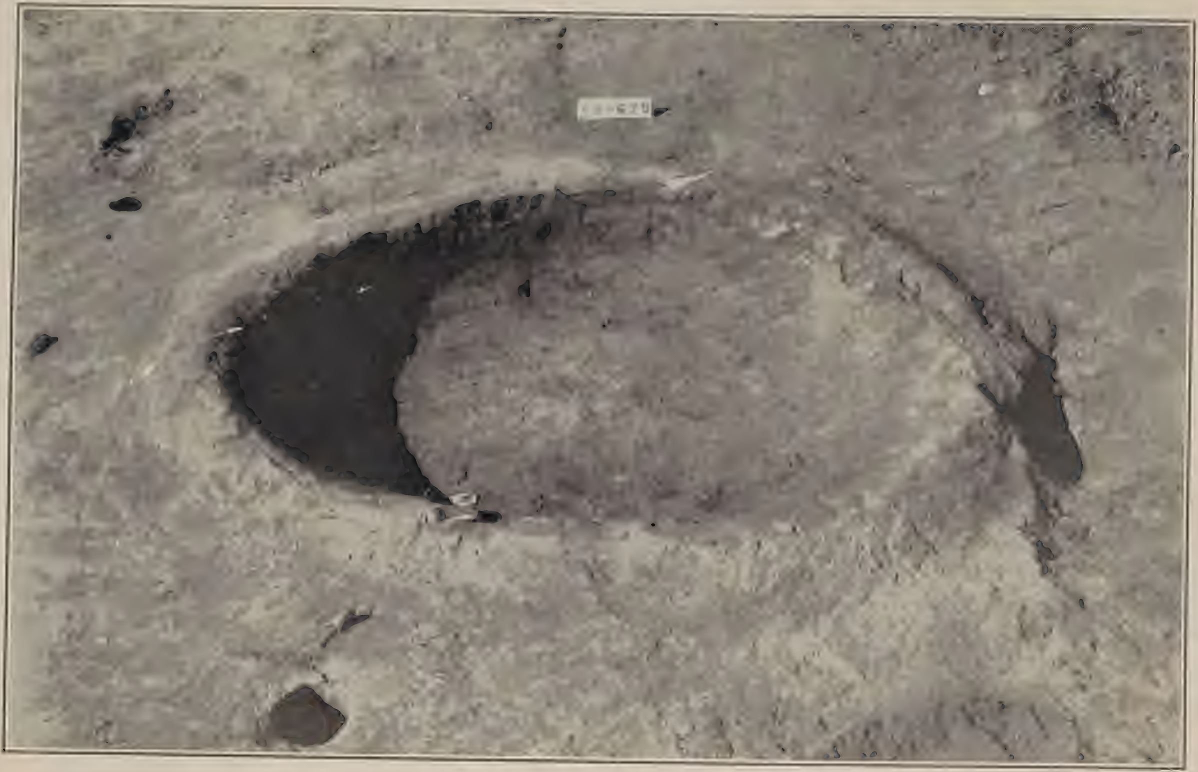
b. Floor sloping to post mold level. Mound No. 2, Site No. 17.



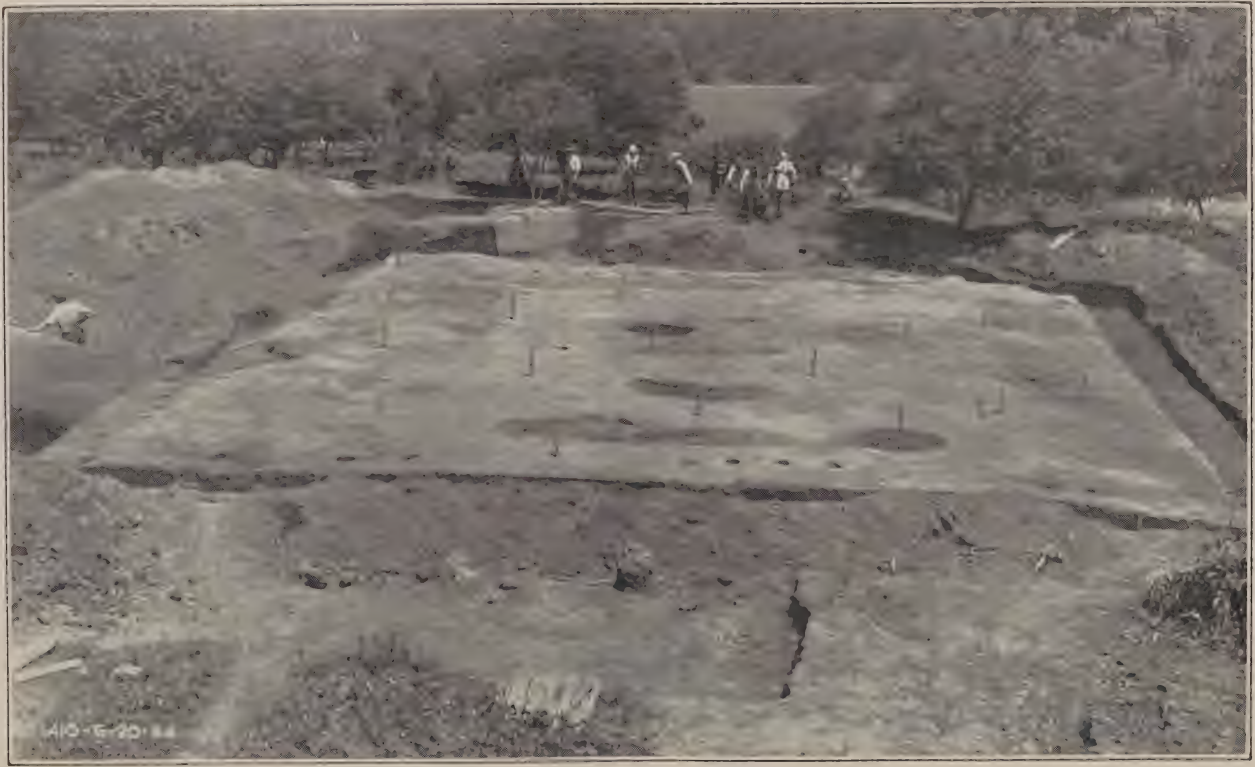
a. Feature No. 5, Mound No. 3, Site No. 17.



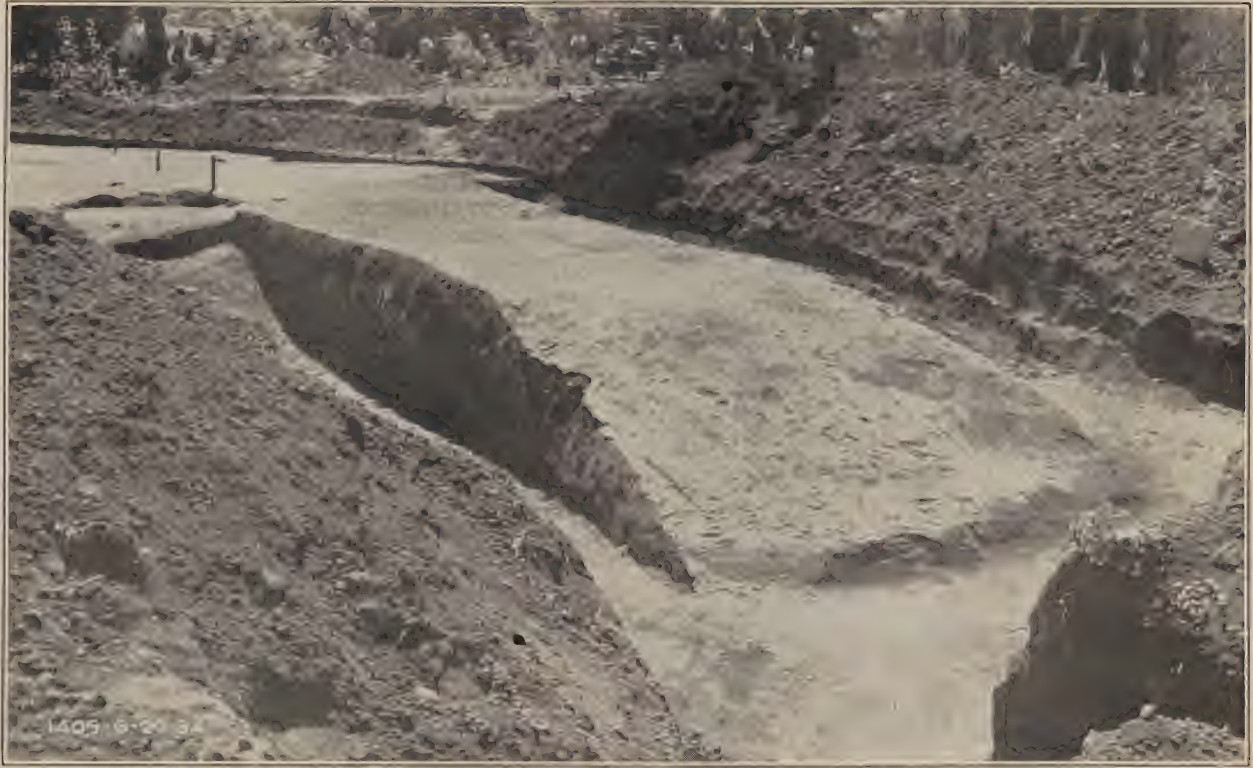
b. Lower floor with fire pits. Mound No. 3, Site No. 17.



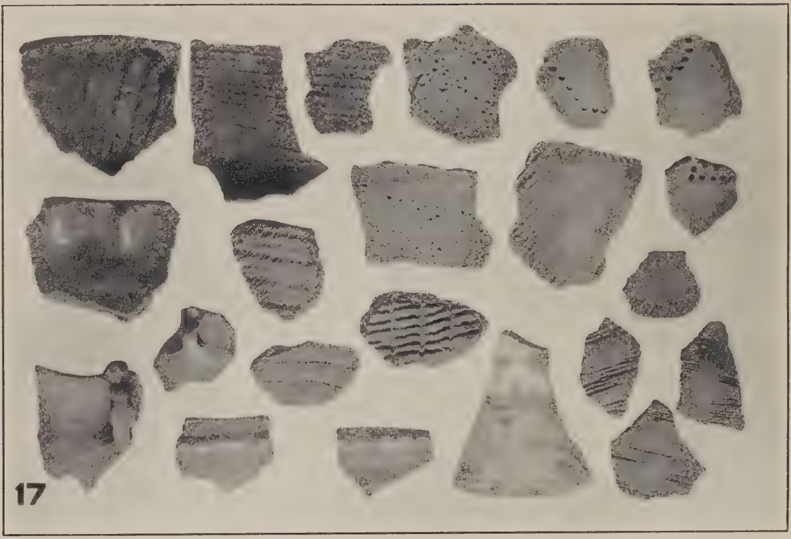
Large, well-made fire basin. Feature No. 11, Mound No. 3, Site No. 17.



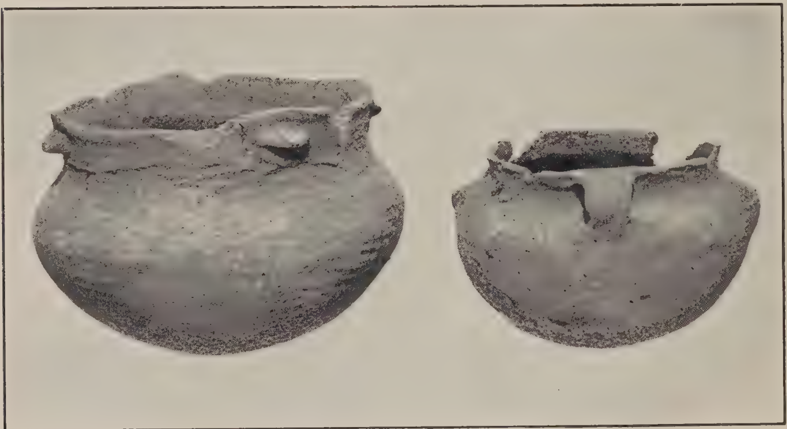
Structure floor. Mound No. 3, Site No. 17.



Ramp to structure floor. Mound No. 3, Site No. 17.



a. Potsherds from general digging. Site No. 17.



b. Mortuary vessels. Site No. 17.

yet it is to be noted that many of the characteristics of such sites are absent on Site No. 17.

The square "altar" with four-pointed basin is a unique feature and so far as is known has never before been reported.

SITE No. 18.—STINER FARM STONE MOUNDS

The farm of Sherman Stiner lies in Lead Mine Bend of Powell River, in Union County, Tenn. The farm is the site of four stone mounds ranged in a group some 30 to 40 feet apart. The mounds were about 16 to 18 feet in diameter and were composed of large slabs of dolomite limestone piled directly on clay soil. There was very little soil between the rocks, and the mounds were all partially covered with small trees which had grown up between the rocks.

Prior to the removal of the stones, all trees, grass, and leaf mold were removed, in order that any intentional method of placement of the stones might be observed. The mounds were not staked off, due to their small size. There was also the possibility that all evidence had been removed by a group of miners, who were said to have disturbed the mounds in the year 1900. The mounds were low, due undoubtedly to the removal of many of the flat limestone slabs by previous investigators. The slabs lay in horizontal position on all four mounds, except in Mound No. 4.

In Mound No. 1 a pit had been dug several feet into the hardpan, possibly by former investigators. At the bottom of this pit were found a few long human bones. All the stones were removed from the mound and no other evidence was encountered beneath them. Because of the scattering of the stones it was impossible to judge what the original diameter of the mound might have been; but its diameter at the time investigation began approximated 14 feet, and the average height was not greater than 1 foot.

Mound No. 2 contained an interesting burial extended in the flesh. The preservation of the skeleton was very poor. The body had been placed on its back on the original ground surface and limestone slabs piled over it. The head was toward the east. The skeleton was evidently an adult male. In association with it were three arrow points, a banded slate gorget, a sandstone pipe with a double bowl, two bear mandibles, and a large piece of mica. (Pl. 105, *b*.) This was the only skeleton in this mound.

These four stone mounds yielded no pottery. From a single grave in Mound No. 2 were taken the artifacts shown in plate 104, *b*, with the exception of the block of mica. The single-hole slate gorget was 4.3 inches long and 0.25 inch thick. The double-bowl pipe was made of sandstone. Its height was 2.8 inches and the extreme breadth 4 inches. The two bowls were symmetrically bored cones converging at their bases in a common stem hole. The interior diameter of these bowls was 1.6 inches. This pipe was found broken into seven large fragments, all close together near the skull of the single burial in this mound. The surface of the pipe had been marred as if attempts had been made to break it by percussion. This would suggest intentional breaking at the time of deposit.

With this burial were found cut canine teeth of bear and portions of the upper jaw of a bear, with molars in situ, together with a number of free molars and incisors. The fact that the canine teeth were cut obliquely and ground down to plane surfaces as shown, and were found associated with the other remnants of the bear jaw, definitely indicates that these fragments are the remains of a bear-jaw ornament. This artifact was found just above the knee of the skeleton.

A similar object has been previously reported from Fullerton Field[1] and denominated a gorget, since it was drilled for suspension, but there was no evidence that it was intended to be suspended about the neck of the owner. Cut canine teeth of bear have been reported[2] from Fox Field in considerable numbers. An examination of these specimens leads to the conclusion that similar ornaments were fairly common on that site. Smith[3] reports similar cut bear jaws from Fox Field and of one he states, "Fig. 7, Plate LI, part of the upper jaw of a bear cut off through the roots of the teeth; from near the legs of skeleton 61, Mound No. 2." Another most interesting occurrence of cut bear-jaw ornaments is reported by Black[4] from Dearborn County, Ind. Here also was a series of low mounds of stone on the top of a high ridge. In one of these mounds the lower portion of an articulated skeleton had at the left knee a cut lower jaw of a bear.

Mound No. 3 consisted of a horizontal arrangement of limestone slabs similar to Mounds Nos. 1 and 2. Approximately in the center, immediately beneath the slabs, was an oblong block of mica, measuring 6 inches in length by 2.4 inches in width by 0.3 inch in thickness, as shown in plate 104, *b*. No other remains were encountered.

Mound No. 4 was small, having a diameter of about 12 feet. The flat limestone slabs were not all in a horizontal position on this mound, but were placed at various angles. It is possible that the stones were left in this position by previous investigators. No evidence of any burials was found beneath these stones.

Mr. Clay Stiner, the owner of the property, informed the workers that the mounds had aroused the curiosity of a group of local miners

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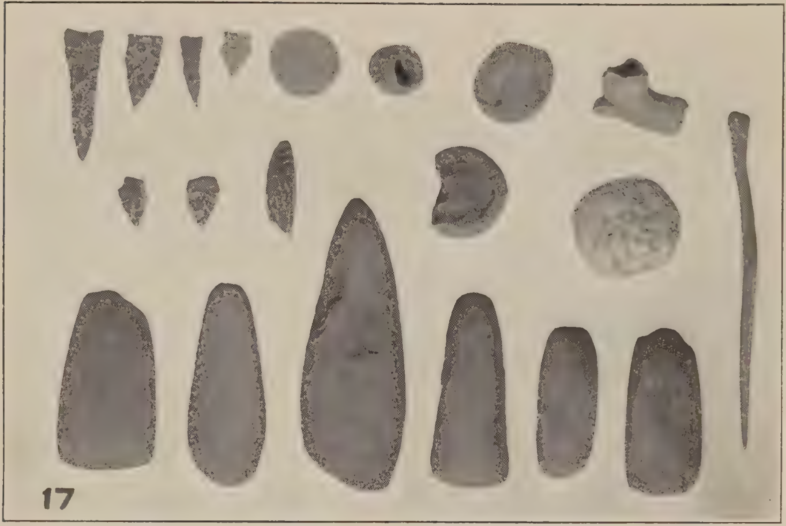
[1] Webb, William S., 1928, p. 277.

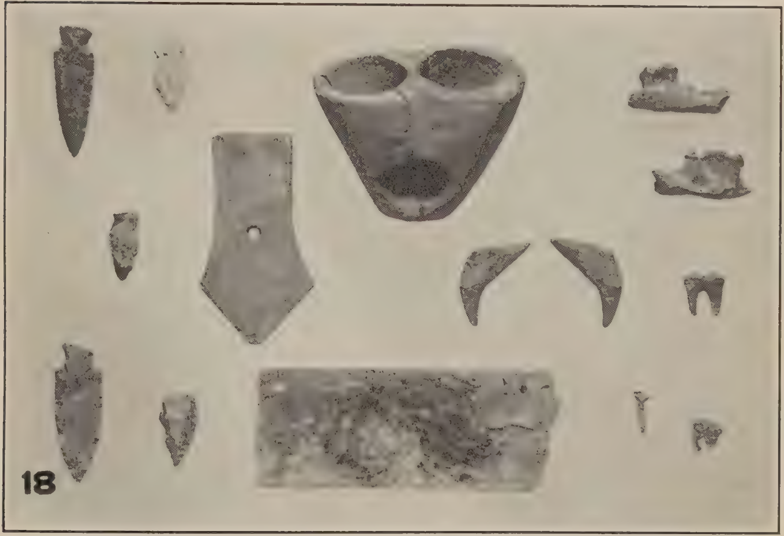
[2] Webb and Funkhouser, 1928, p. 201.

[3] Smith, Harlan I., 1910, p. 221.

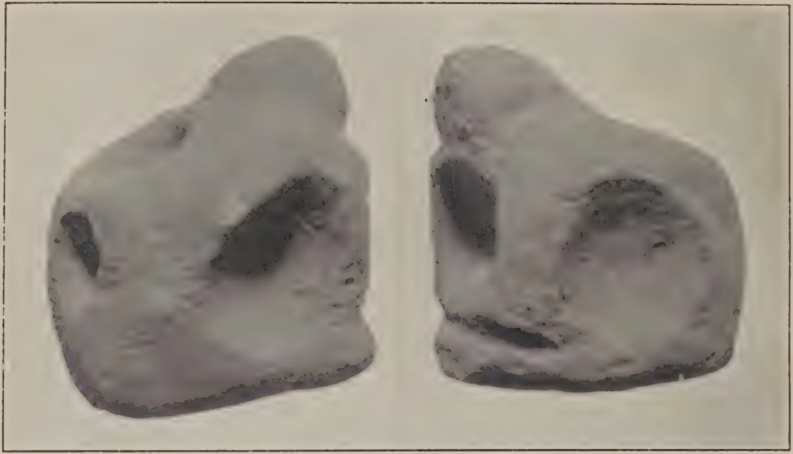
[4] Black, Glenn A., 1934, p. 233.



a. Stone artifacts. Site No. 17.



b. Artifacts from Mounds No. 2 and No. 3, Site No. 18.



a. Double conoidal pipe. Site No. 17.

b. Single burial. Mound No. 2, Site No. 18.

on a Sunday in the year 1900. During the course of the investigation a thunderstorm occurred, one of the bolts striking a nearby tree. This was regarded as an evil omen by the men, with the result that only three of the four mounds were disturbed.

SITE No. 19.—COX MOUND

This site is on the land of Mr. A. B. Cox, on Clinch River, 9 miles west of Clinton, in Anderson County, Tenn. The mound is situated about 150 feet from the east bank of the river, in the midst of a level and very fertile river-bottom field, as shown in plate 106, *a*. Plate 106, *b*, shows a view of this field from the top of the mound, looking up Clinch River. This land has a history of nearly 100 years of cultivation. It is quite often overflowed at high water, and at such times the presence of the mound has caused drift to accumulate on the upstream side. This drift has raised the level of the field northeast of the mound and covered over what was evidently an old village. Even before the mound was built there were areas in the old village which were covered with mussel shells, showing a river deposit of silt on top of them. It was not possible to distinguish a humus line under the mound, since it was built with the black soil of the village on a portion of the old village site which showed evidence of overflow.

When excavation was begun Mr. Cox had already had the land planted in corn. In spite of this fact, he kindly permitted the excavation of the mound, stipulating, however, that the field should not be disturbed. Naturally, no investigation of the village site which lay outside the mound area could be undertaken, and the area of the mound which was staked off was reduced to as small a compass as was consistent with proper operation, as shown in plate 106, *c*. A section of the mound 60 feet by 60 feet was staked off, and later an additional 10-foot strip on the north border was excavated. This was designated by primes, as shown in the ground plat of the mound, figure 66. The mound appeared to be approximately 85 feet in diameter.

Excavation was begun in the 10-foot strip 5.6–6.0 and was carried down through shell layers of an old village site to earth which had once been laid down by stream action. This exposed the wall 5.0–5.6, a view of which from the southeast is shown in plate 107, *a*. A trench was then extended around the border of the staked area so as to entirely block out the central portion of the mound with a trench 10 feet wide. In the trench on the east side remnants of a straight line of vertical cedar posts were found, as shown in plate 107, *b*, which presents a view from the northwest of the wall 1.1–4.1. This

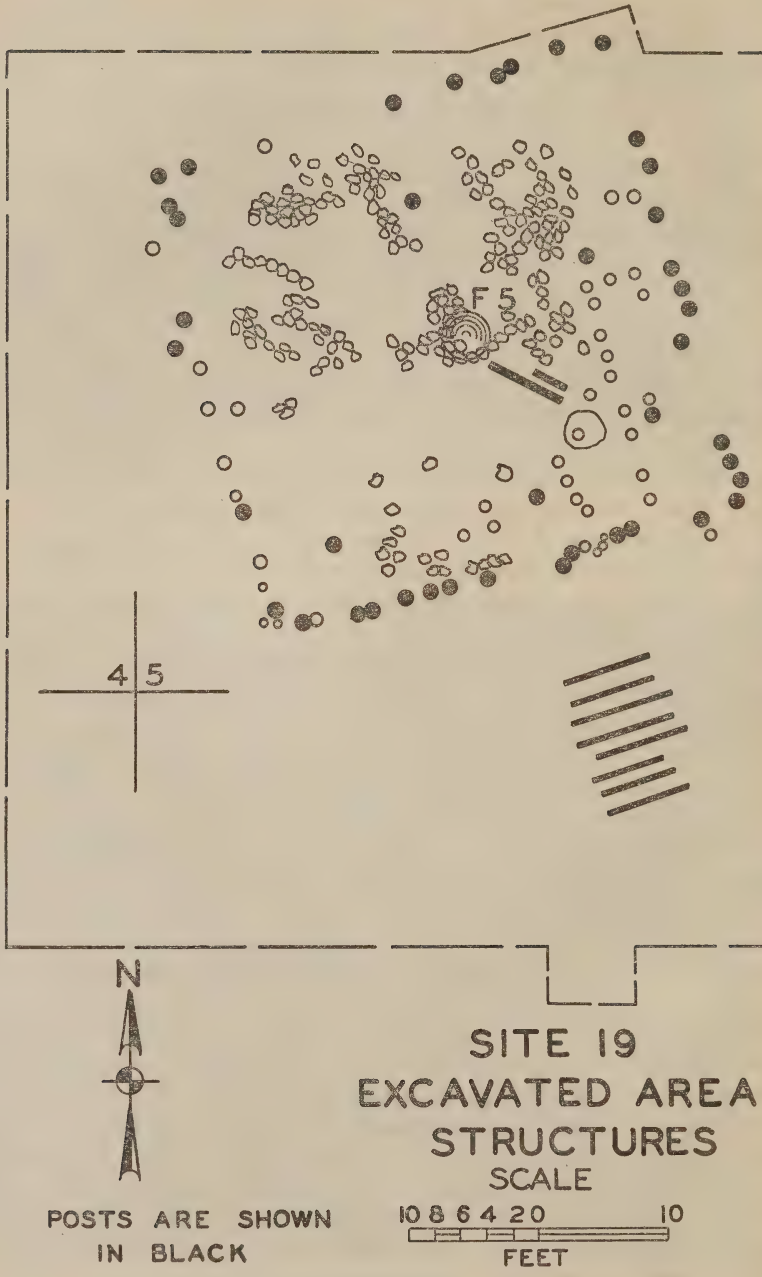

F 5
4 5
N
SITE 19
EXCAVATED AREA
STRUCTURES
SCALE
10 8 6 4 2 0 10
FEET
POSTS ARE SHOWN IN BLACK

FIGURE 66.

find, which at once suggested the wall of a structure, made necessary the extension of the area to be investigated to include an additional 10-foot strip of the 0–6 line.

From this outside trenching it was at once seen that the mound had been erected on an ancient village site which long antedated the mound. The presence of the village was indicated by the deposit of layers of shell and other midden material containing potsherds. There were also old burials which had been made in the midden material before the building of the mound. Although the mound contained 49 identifiable burials, it was not a "burial mound" in the ordinary sense; that is, it was not erected for the purpose of burial, or built up, as true burial mounds often are, by successive additions of earth used to cover the burials which from time to time were deposited on top of the previous burials.

This mound, which at the center was some 8 feet higher than the old village surface, seems to have been a true town-house site. The mound of earth was actually formed by the collapse of structures raised on wooden posts. Each structure had several feet of earth on its roof. As the wooden structure decayed and fell in ruins its earthen roof raised the level of the mound. On this the new structure was built. It appeared that at least three successive buildings had been erected here.

The first and primary structure was set on the old village floor, covering over the usual shell beds, gravel deposits of the river, and the old midden deposits, which contained occasional burials. This building was, as nearly as could be measured, 37.5 feet in length by 36.5 feet in width, as shown in the base plat, figure 66. It was erected of large red-cedar posts, averaging 14 inches in diameter, set uniformly about 3 feet apart. The basis of these posts penetrated the black, solid earth below the village floor to depths varying from 4 inches to 30 inches. It is believed that this structure had on its roof some 30 inches of earth taken from the village. It may have been the weight of this earth which caused the variation in depth of the post molds of the primary structure. If we remember how the old village floor was built up of midden material, it is seen that a series of posts set on end would settle unequally in this made material.

When the primary structure collapsed the earth of the roof covered up the wall posts to a depth of from 24 to 30 inches. On this level a new structure was erected. With the collapse of the primary structure, some of the vertical posts pushed up through the roof earth and extended above it, while some were so decayed that they were merely broken off and covered over by the falling roof. The broken posts were left where they fell by the builders, and either decayed and left post molds, as shown in the base plat, or, if preserved, appeared as chunks of cedar in the layer of earth which covered the structure floor to a depth of 30 inches. If they protruded through the earth roof they must have been in the way of new construction and were probably removed by the builders by the simple expedient of wiggling them loose and pulling them up. In such a case the post hole would have been filled with black soil and there would have been neither cedar logs nor post molds remaining. This may account for the absence of any evidence of posts in the gaps on the east and north walls. On the south wall the builders seemed to have desired to make the new wall coincide with the old, for they set in a new post between each of the old ones which protruded through the roof earth of the old building. This placement of the new structure made the removal of the old posts unnecessary and left the two structures interlocked. Each post of the old structure was in juxtaposition to one of the new. This was beautifully shown by some seven pairs of post remnants in the south wall (pl. 108).

It was conjectured in the preceding paragraph that the posts which came up through the roof earth might have been pulled out by the builders of the new structure by the process of wiggling them free and lifting them out. Conversely, the difficulty of removing the posts on the south wall, some of which had settled as much as 30 inches farther into the soil of the old village, because of the weight on the roof, might have decided the builders to make the south wall of the new structure coincide with the old.

Whatever the motives governing its construction, the secondary structure was raised on the site of the old. The south walls were practically coincident vertically, but the orientation of the two buildings seemed to have been slightly different. The north wall of the secondary structure was somewhat difficult to locate, therefore its dimensions are in doubt. Enough was found, however, to make it reasonably safe to assume that it was not very different in size from the primary structure.

The primary posts were rather large—14 inches in diameter. They were in all probability mostly good specimens, and were embedded in river-bottom soil which was often very wet and never thoroughly dry. This condition of the soil resulted in the fair preservation of many of these posts and in the extraordinarily good preservation of a few, which were so little affected by their long burial that, when sawed in order to get sections for the study of tree-growth rings, they gave off the usual odor of red cedar. Most of these post fragments, however, were so decayed that they were reduced to "punk", which would keep its form while wet, but would split, check, and disintegrate when dry. It was possible to preserve most of these remnants by treating them with a saturated solution of paraffin in gasoline. After several applications, sufficient body was formed to resist excessive drying. It was necessary, however, in order to prevent the specimen drying too fast, to apply the paraffin before the specimen was removed from the earth. The earth piers shown in the photographs of the excavations contained post fragments which were being "treated" before being removed from the ground.

The secondary structure must have had a definite floor some 24 to 30 inches above the old village site, but there was no evidence of any special preparation of a floor by the use of clean clay, sand, or other material, as is sometimes the case. Further, the roof of the secondary structure was also covered with earth from the nearby village. When this secondary structure collapsed the earth above and below its floor was so much alike, and both were so black, that no line of separation could be found on a vertical profile, although such separation was carefully sought.

Aside from slight variations in size and orientation, the only difference in construction in the primary and secondary walls seemed to have been that under the end of each secondary post a flat rock was placed in the hole dug to receive it. Thus the post rested on a stone footing, as shown in plate 109, *a*, which is a close-up of a pair of posts, the primary on the right and the secondary on the left, resting on a stone. This pair is one of seven such pairs found in the south wall, as shown in plate 108. The earth pillars were left, as they were necessary to support these post remnants, and the earth prevented the posts from drying excessively before the excavation was completed. The builders doubtless found this stone footing necessary, since the secondary structure was built on the loose earth of the primary roof, which was not nearly so solid as the old village subsoil.

After the collapse of the secondary structure, the earth on its roof raised the surface on the mound to a height of more than 7 feet above the original village floor. At this level there seems to have been a tertiary structure which about coincided in size and orientation with the secondary structure. Its exact dimensions and orientation are uncertain, for after its collapse the earth layer forming its roof raised the level of the mound to something more than 9 feet in height. This height would naturally permit considerable erosion of soil, and the cultivation of this site for nearly a century has resulted in much spreading of earth from the top of the mound. In the tertiary structure a definite floor was prepared from yellow clay, brought in, doubtless, from the neighboring hillsides. The hardness of this level floor and its sharp contrast in color against the black soil of the bottomland, above and below it in the mound, makes the floor of this tertiary structure definite. Near the center of this floor was the disturbed remains of a fire basin. Because of previous disturbance, probably at time of the burial intrusions, this basin was so broken up that it was completely removed by workmen before its nature was discovered. That this was the floor of a structure is indicated by the finding of the ends of two cedar posts at this level, 72 and 82 inches above the village floor, and near the center of this mound. The earth covering this floor had by erosion been reduced to a thickness of only 22 inches at the center of the mound. This thickness was further reduced as the floor extended horizontally outward, and at the edges of the mound this floor had been plowed away during cultivation.

It is believed that other cedar posts once part of this tertiary structure have been plowed away at the edge, leaving as the only remaining evidence of the structure the prepared clay floor and the cedar posts near the center, which probably were not wall posts but roof supports. If it should appear to some that the evidence for a tertiary structure is hardly sufficient to prove its existence, it may be said that in the understanding of the problem it is of little consequence whether or not a third structure ever existed here.

This tertiary structure, if it ever existed, seems to have been the last building on the site, for with its collapse the earth of the roof, so far as can be seen, never served as a structure floor, but into it at a later time eighteen or more burials were intruded. The present depth of these burials varies from 18 inches to 22 inches. None of these burials quite reached the prepared floor of the tertiary structure. Some were several inches above it, as shown in plate 110, while others are a foot or more higher.

Because of the erosion of earth from the top of the mound, the burials in the old village site immediately adjacent to the primary structure were naturally buried deeper and deeper, while the intrusive burials on the mound top were made shallower. The difference in time between these two groups of burials may be great. Certainly it is at least as great as the total age of the two, or possibly three, buildings on this site.

SPECIAL FEATURES

Feature No. 1.—Near stake 6.1 and from 6 to 10 inches above the village floor a pile of 72 limestones and sandstones of various sizes was found in an irregular arrangement. This pile of stones, which was 48 inches by 16 inches, is shown in plate 109, *b*. Seven inches above these stones was a charred layer of bark and wood overlaid by burned clay of a thickness varying from 2 inches to 5 inches. There was no midden or ashes among the rocks, which show no evidence of fire.

Feature No. 2.—Along the south wall at stake 6.1 to 6.4 there was a layer of burned clay which appeared to be a portion of an old floor or roof made of bark or wood which had clay over it. Fire burned on the clay had charred the wood and bark. Unfortunately the layer extended into the wall of the trench away from the mound, and thus lay under a portion of the area which could not be excavated. Also it was already covered over by tons of earth from the mound when discovered. The conditions under which permission had been given by the owner for the excavation did not permit unlimited exploitation in this direction, and it was not possible to trace this layer as far as it would have been desirable. However, a small extension of the trench under a portion of this burned layer uncovered a pit which had been dug into the old village floor and in which Burials Nos. 4 and 7 had been placed. Before the bodies were placed in this pit sand had been sprinkled and bark had been laid on the bottom and upright on the sides. After the bodies had been deposited more bark and wood had been laid over them and over this had been placed a layer of clay upon which a fire had been burned.

Feature No. 3.—From stakes 4.1 to 5.1, on the south side of the mound, there was a series of eight horizontal posts, laid parallel, each succeeding one being at a higher level. They formed a stairway starting on the village floor level and gradually ascending to the prepared floor of the tertiary structure. From the top step a short ramp led to the floor, as shown in plate 111. The length of the entire stairway was 11 feet and the width 6.5 feet. The average rise per step was 6 inches. The logs were about 18 inches apart. The preservation of the lower logs was poor, but the upper logs were in much better condition. They were preserved in the hope that they might be useful in determining the age of this structure. It should, perhaps, be pointed out that such steps might have been used to gain access to the roof of a "town house." It is well known that among certain tribes in the early colonial time persons regularly went upon the roof of the town house when occasion demanded.[1]

Feature No. 4.—Scattered in groups from 6 inches to 14 inches above the primary floor were more than 200 irregular rocks. One pile, containing 58 stones, associated with midden was found. This stone pile is shown in plate 112. Nothing was found under these stones and no reason was discovered for their presence in this site.

Feature No. 5.—On the village floor and approximately in the center of the primary structure there was a clay pit. The pit was 45 inches in diameter and 10 inches deep. It was well made and was found filled with ashes, burned animal bones, and potsherds. While it cannot be certainly proven, it seems reasonable to conclude that this pit was associated with the first structure on this site.

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[1] Timberlake, 1927, pp. 101–105.

BURIALS

The horizontal disposition of all burials in this mound is shown in figure 67, which is a plat of the excavated area. As has been pointed out, it appears that there are two groups of burials on this site. Those outside the structure area were buried in the old village floor and are therefore precedent to the structure and to the mound. By erosion of the earth from the mound they now appear at considerable depths. Those buried within the structure area are above the last structure floor level, and are therefore intrusive into the mound and subsequent to it. In order to distinguish between these two groups, the outlines of the structures are also shown in figure 67. Burials were numbered as found and are recorded and discussed in order.

Burial No. 1.—At stake 5.2, at a depth of 22 inches below the present surface, the skeletal remains of a partially flexed adult male was found (pl. 113, *a*). Associated with the burial were two strips of wood. One was along the center of the body in the vertical axis and was broken into two pieces. One piece extended from fibula of right leg to pelvis and was in line with a section of the same strip which began at the fourth rib and extended to the edge of the jaw. The second strip was 11.5 inches in length and lay parallel to the right arm, as may be seen in plate 113, *a*.

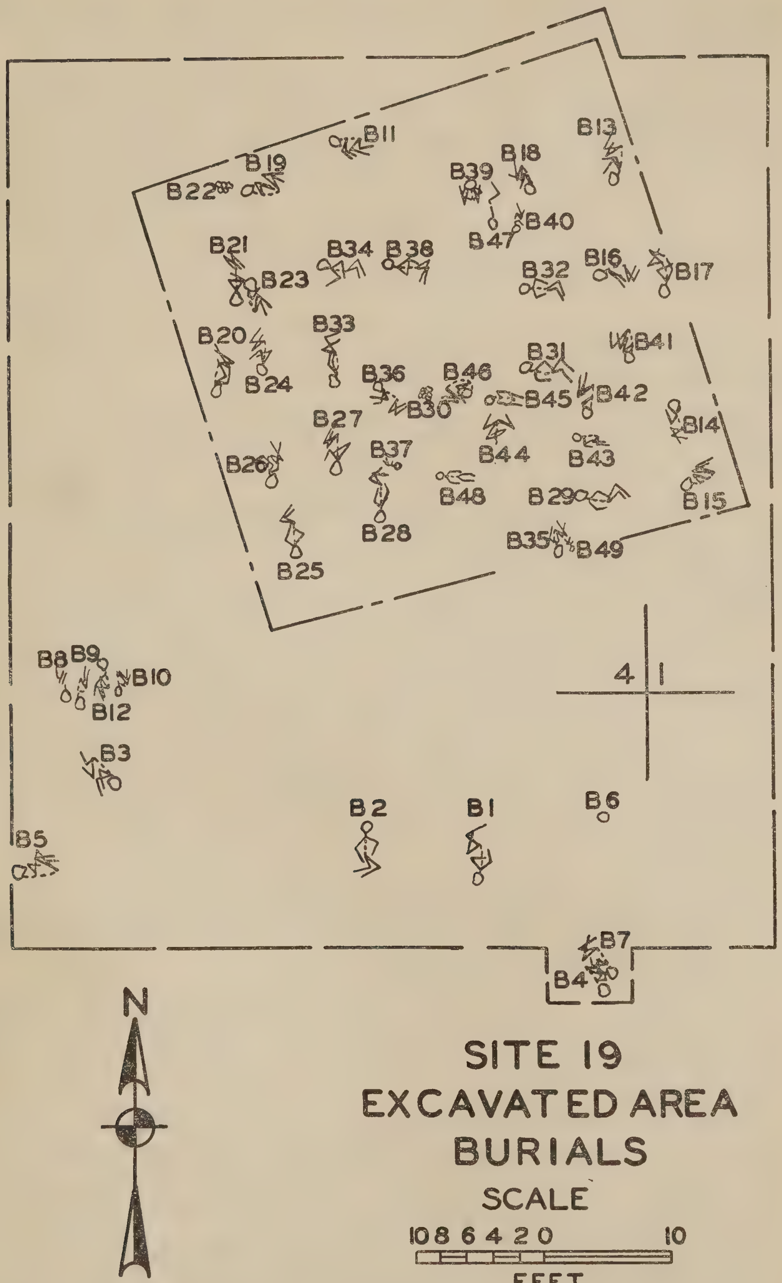
Burial No. 2.—At stake 5.3 the partially flexed remains of an adult male was found, 36 inches above the village floor. They were associated with Burial No. 1. The body was placed on the back with the head to the north and the face to the west.

Burial No. 3.—On the original ground surface, southwest of stake 4.5, the fully flexed remains of an adult male was found. The body had been laid on the left side with the head to the southeast and the face to the west. The preservation was good. Two rocks were found between the lower legs.

Burial No. 4.—At stake 6.1, 22 inches below the original surface of the village, a fully flexed adult male skeleton was found. It was lying on the right side with the head to the southeast and the face to the east. It was associated with Burial No. 7.

Burial No. 5.—At stake 5.5, 6 inches below the old village floor, a flexed burial of an adult was found. The head was to the west, and the body had been laid on the left side, almost face down. The face was turned to the north.

Burial No. 6.—At stake 5.1, and 51 inches above the village floor, the extended burial of a child was found. Since it was only 14


B11
B13
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B9
B10
B12
4
1
B3
B2
B1
B6
B5
B7
B4
N
SITE 19
EXCAVATED AREA
BURIALS
SCALE
10 8 6 4 2 0
10
FEET

Figure 67.

inches below the present surface of the mound it had been partially disturbed by a plow. The body had been buried with the head to the north.

Burial No. 7.—At stake 6.1 and 8 inches below the village floor the partially flexed remains of an adult male was found. The body had been laid on its back with the face up and the legs flexed to the left. The head was toward the southeast. There was a flint point near the left shoulder and three pieces of wood lay on and parallel to the body. Another lay across the neck. This burial, together with No. 4, was under a burned-clay floor, Feature No. 2.

Burial No. 8.—East of stake 4.6 and 10 inches above the village floor an adult burial in the flesh was discovered. The head was to the right and the chin to the north. The body was found 10 inches above the village floor.

Burial No. 9.—East of stake 4.6 a fully flexed adult burial was found fairly well preserved. The body had been placed on the right side, the head to the north and the face to the right. Associated with the burials were two small bowls placed some 3 inches below the level of the body. Five inches to the west was a smooth flat limestone hand hoe which was 6 inches in diameter.

Burial No. 10.—West of stake 4.5 the partially flexed remains of a child with head to the south was found. Clay below the remains showed evidence of a woven mesh. There were traces of bark above and below the remains. This bark had been used to line the grave below the body, and had *been laid in parallel strips longitudinally* over the body at time of burial. Its condition was much too poor to permit removal, but the distinguishing pattern of bark was clearly discernible. Three limestone hoes were found nearby, with one unworked bear jaw.

Burial No. 11.—West of stake 0.3 and 16 inches below the present surface of the mound the remains of a fully flexed adult was found. The head was to the west and the body lay on the right side with face to the right. The preservation was poor.

Burial No. 12.—West of stake 4.5 and 23 inches below the village floor a fully flexed adult burial was found. The body was on the right side, with head to the north and the face to the right. The preservation was poor.

Burial No. 13.—West of stake 0.1 and 10 inches below the present surface of the mound a fully flexed adult burial was found. The body had been laid on the left side with the face to the left and the head to the north. The preservation was fair. The body may have suffered post-burial disturbance before the present excavation.

Burial No. 14.—Near stake 2.1 and 18 inches below present ground surface the remains of a partially flexed adult female was found.

The body had been placed with the head to the north and the face to the right. Two shell hairpins were near the jaw. Preservation was fair. In plate 113, *b*, note the diseased condition of the right femur.

Burial No. 15.—Near stake 2.1 and 11 inches below the present mound surface the remains of a tightly flexed young adult male was found. The body lay on the left with the face to the left and the head to the southwest.

Burial No. 16.—Near stake 0.1 and at a depth of 13 inches below the present surface the remains of a partially flexed adult female was found. The body lay on the right side with the head to the west and the face to the right.

Burial No. 17.—At the foot of Burial No. 16 and at a depth of 17 inches below the present ground surface a partially flexed adult male burial was found. The body lay partially on the left side with the head to the south and the face to the left. The preservation was fair.

Burial No. 18.—Near stake 0.2 and 14 inches below the present ground surface the remains of a partially flexed adult male was found. The body lay on the left side with the face to the left and the head to the south. At the right shoulder one of the spatulate problematical forms of limestone was found as shown in plate 114, *a*. There was also a large rim sherd near the hands.

Burial No. 19.—Near stake 0.4 a fully flexed adult male burial was found. The body lay on the left side with the face to the left and head to the west. The preservation was fair.

Burial No. 20.—At stake 1.4 and 21 inches below the present ground surface a partially flexed adult male burial was found. The body lay on the right side with the face to the right and the head to the south. Preservation was good.

Burial No. 21.—Near stake 1.4 and 20 inches below the ground surface the remains of a partially flexed adult female was found. The body lay on the back with head to the south and face to the right. The legs were elevated, with feet folded under the body. The arms were flexed over the breast.

Burial No. 22.—Near stake 0.4 at a depth of 12 inches below the surface there was found a skeleton which had been disturbed by the plow. The bones were fragmentary and preservation was so poor that the original disposition could not be determined.

Burial No. 23.—Near stake 1.4 and 15 inches below the present ground surface the remains of a flexed adult female was found. The body had been placed in a bark-lined grave with the head much higher than the pelvis. The position of the skeleton suggested a sitting posture. The knees were drawn up under the chin with feet close to the pelvis. The skull had fallen forward, face downward. It had suffered some damage, probably by nearness to the plow level. The body had been covered with strips of bark, some of which are shown in plate 114, *b*.

Burial No. 24.—Five feet north of stake 2.4 and 31 inches below present ground level a partially flexed adult male burial was found. The body lay on the left side with head to the south and face to the left. A round limestone lay 3 inches southwest of the skull. The body had been placed on a burned-clay floor upon which rested a covering of strips of bark or wood. Strips of bark had been placed on top of the body at burial. The right arm lay across the body, with fingers folded back. The left arm was straight with fingers on left femur.

Burial No. 25.—East of stake 2.4 and 15 inches below present ground surface was found the remains of a partially flexed adult female. The body lay on the right side with face up and head to the south. The preservation was poor.

Burial No. 26.—Near stake 2.4 and 12 inches below present ground surface a partially flexed adult burial was found. The body lay on the right side with face to the right and head to the south.

Burial No. 27.—South of stake 2.4 and 18 inches below the present ground surface the remains of a fully flexed adult male was found. The body was on its back, with face to right and head to the west, and with the legs flexed to the left. Preservation was good.

Burial No. 28.—West of stake 3.3 and 15 inches below the present ground surface a partially flexed adult female was found. The body lay on the back, face up and head to the south.

Burial No. 29.—Southwest of stake 2.1 and only 10 inches below present ground surface a partially flexed adult burial was found. The body was placed on the left side with face to the left and head to the west.

Burial No. 30.—Near stake 2.3 the workmen shoveled out fragments of ribs and skull, and scattered teeth of a child. These were very near the surface and all were so fragmentary as to represent only a trace of a child's burial.

Burial No. 31.—North of stake 2.1 at a depth of 24 inches below the present surface of the ground was found a partially flexed adult. The body lay on the left side with face to the left and head to the west. Near the elbows were two horn flaking tools.

Burial No. 32.—North of stake 1.1 and 22 inches below the present surface of the ground was found the burial of a partially flexed adult female. The body lay face down, with face turned to the right and head to the west. A large grooved rubbing stone, 14 inches greatest diameter and with three deep grooves, was found at the foot of the burial, as shown in plate 115, *a*.

Burial No. 33.—Near stake 1.3 and 24 inches below the present ground surface a partially flexed adult burial was found. The body lay on the left side with face to the left and head to the south. Preservation was fair.

Burial No. 34.—North of stake 1.3 and 22 inches below present ground surface was a partially flexed adult male burial. The body lay on its back with face to the left and head to the west; legs flexed to the left. There was a row of eight limestone rocks to the north and east of the burial, the stones being placed about 10 inches from the remains.

Burial No. 35.—At stake 3.1 and 10 inches below the ground surface was found the burial of a child. The body was partially flexed on right side with face up and head to the south.

Burial No. 36.—South of stake 1.3 and 22 inches below ground surface there was found the remains of a partially flexed adult female. The body lay on the right side, face to the right and head to the southeast. The preservation was fair.

Burial No. 37.—North of stake 3.3 and at 21 inches below the ground surface there was found the remains of a child. The body was partially flexed, on the right side with face to the right and head to the east. The preservation was poor. Near the left shoulder there was an incised shell and near the neck four perforated shell disks.

Burial No. 38.—South of stake 0.3 and at a depth of 14 inches below the surface was found the remains of a partially flexed adult female. The body lay on its back with face to the left, legs flexed to the left and head to the west. A limestone rock lay over the left hand.

Burial No. 39.—West of stake 0.2 and at a depth of 25 inches below the ground surface there was a burial of an adult. This body had been placed in a sitting posture with feet together and drawn up to the body. The skull had fallen forward, face down, into the pelvic cavity, and the spinal column settling on itself, became piled up in a small area under the skull. (Pl. 116.)

Burial No. 40.—South of stake 0.2 and 16 inches below surface level was found the burial of a child. The body lay on the right side with legs flexed to the right; face to the right and head to the south.

Burial No. 41.—Southwest from stake 1.1 and 26 inches below the surface level was found a fully flexed adult burial. The body lay on the left side with face to the left and head to the south. There was a bone awl at the lower ribs.

Burial No. 42.—North of stake 2.1 and 24 inches below the ground surface there was found the burial of a partially flexed adult. The body lay on the left side with face to the left and head to the south. The preservation was poor. The midportion of the skeleton was cut into by workmen before it was discovered. A large flint spear was found under the head, with its point to the east.

Burial No. 43.—At stake 2.1 and 20 inches below the ground surface a fully flexed adult male burial was found. The body lay on the right side with face to the right and head to the west.

Burial No. 44.—Near stake 2.2 and 24 inches below the ground surface there was a partially flexed adult male burial. The head was disarticulated and was placed face down over the left breast. The body was partly on its back, with legs flexed inward so that the feet were near together at the pelvis, but the legs were spread apart so that the knees were at a maximum separation. This position may be the result of a burial in a sitting posture. There were some shell beads about the neck and a perforated slate problematical form with sharpened edge was found at the pelvis.

Burial No. 45.—Near stake 2.2 and at the feet of Burial No. 44 a fully flexed adult male burial was found. The body lay on the left side with head of body to the west. The head was disarticulated.

Burial No. 46.—Northwest of stake 2.2 and 24 inches below the present ground surface was a fully flexed adult male burial. The body lay on the left side with face to the left and head to the east. There was a flint point on left pelvis.

Burial No. 47.—Southwest of stake 0.2 and 26 inches below the present ground surface was the burial of a child, partially flexed. The body lay on the left side, face to the left, with the head to the south.

Burial No. 48.—Southwest of stake 2.2 at a depth of 32 inches there was a disturbed burial of a child. The preservation was very poor. The body lay on its back, face up and head to the west. The legs had been previously disturbed. A decorated and perforated shell was found at the right shoulder. Under this shell was a second worked shell. There were shell beads about the neck of the skeleton, and a large worked shell under the chin. Several pieces of sheet mica were found to the right of the head.

Burial No. 49.—Northeast of stake 3.2 and 26 inches below the present ground surface was found an adult male burial. It was clear that the body had been placed in a sitting posture in a pit. The knees were elevated and the large leg bones were nearly in a vertical position. The feet were drawn up close to the body. The head had fallen forward, face downward, into the pelvic cavity, as is usual with this type of burial. The spinal column and ribs had retained, for the most part, their anatomical order and still remained nearly in a vertical position, the bones of the neck being much higher than the skull, as shown in plate 115, *b*.

Pottery

Grass and cord paddle-marked sherds predominate on this site. There are some sherds of heavy large vessels, but the majority seem to vary from medium sizes to small. These paddle-marked vessels, as well as plain vessels of similar size, seem to have had usually plain rims to which were attached flat and round lugs, and strap handles.

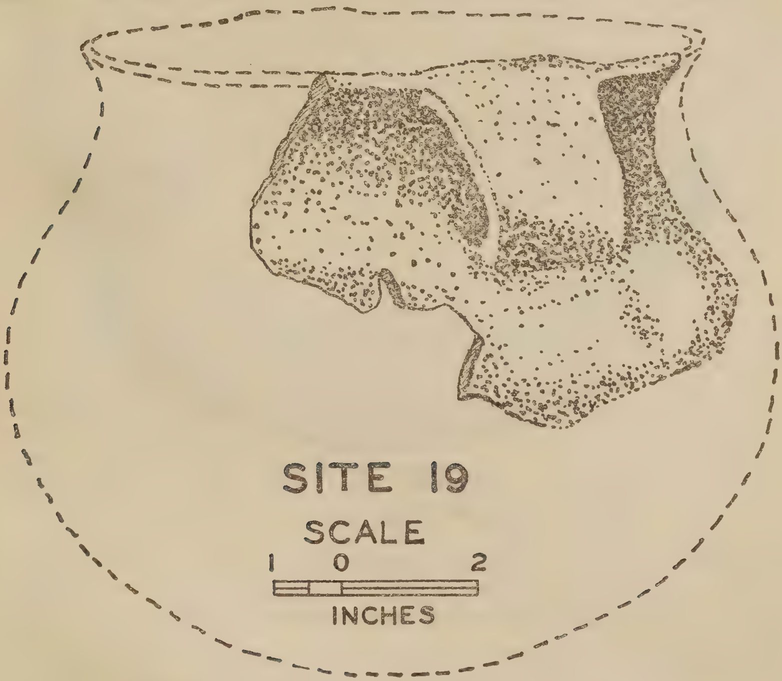

Figure 68.—Drawing restoration of vessel.

These strap handles, as shown in plate 117, *a*, were broad as compared to their length, and come up even with the rim, as shown in figure 68. No round handles were found on this site.

Some textile-marked sherds of the usual heavy ware were found. The most significant variant of this site was the large number of sherds showing the conventional frog symbol, as illustrated in plate 117, *b*. This design takes the form of two loops with parallel sides, which are slightly below and follow the rim of the vessel. They are made in extreme relief, being modeled and attached to the outside of the vessel. Between the open ends of a pair of loops it was usual to symbolize the head of the frog as a horizontal rim lug showing eyes and mouth. In some cases the broad strap handle is modeled to represent the frog as seen in lower left sherd in plate 117, *a*. Here "eyes" are made in the handle and legs in high relief are placed on the side of the vessel. The two types of frog symbolization are demonstrated by drawing restoration of sherds as shown in figures 69 and 71. This use of the frog has been found in no other site in the basin and is abundant here.

Plate 118, *a*, shows a variety of wares from this site. The fluted rim on small vessels is common. Incised and punctate specimens are not common. All material from this site was shell-tempered. From one section of the mound a number of sherds of wattlework were found. As shown in plate 118, *b*, this clay, mixed with grass and some large pieces of shell, was plastered on parallel canes about 0.5 inch in diameter. It does not occur in sufficient quantity to justify the conclusion that it was used in walls of buildings. In this mound it was used only in some minor construction.

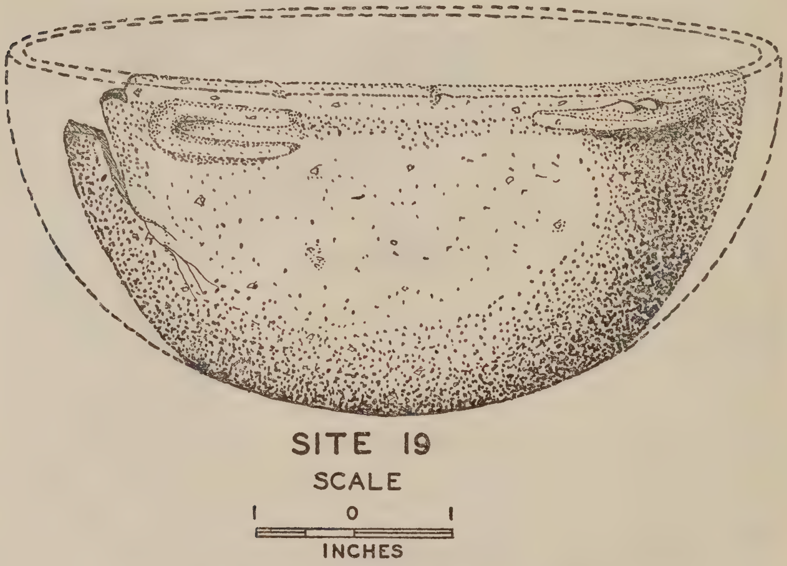

FIGURE 69.—Drawing restoration of bowl.

Very few complete vessels were found on this site. In some instances sherds from a single vessel were grouped so that partial restorations were possible. In plate 119, *a*, are two vessels partially restored. One is a typical frog effigy bowl—a mortuary offering. The other is a large cooking pot, cord-paddled, found crushed on the old village site under the mound.

ARTIFACTS

From the general excavation of the mound a number of stone and pottery disks were obtained. Some also were obtained in association with burials. Bone artifacts, consisting of awls, cut bone and antler, bone hairpins, and a chisel from the ulna of a wolf are shown in plate 119, *b*.

Stone mortuary offerings are shown in plate 120. The spatulate perforated stone is made of limestone, having an extreme length of 5.5 inches. It probably at one time had a high polish; its present condition is due to action of acid in the soil. The perforated blue slate found with Burial No. 44 is 6 inches by 3.3 inches. The quartz discoidal is 2.2 inches in diameter. The large disk in upper left-hand corner is a very perfectly worked hammerstone which may have been intended later to be converted into a discoidal. The large spear was under the head of Burial No. 42. Burial No. 48 yielded three mask gorgets, as shown in plate 121, *a*; also one badly damaged rattlesnake gorget shown in plate 121, *a*. Burial No. 49 yielded the mask gorget shown in plate 121, *b*. The small beads, together with some 8 or 10 pearl beads, were taken from Burial No. 44.

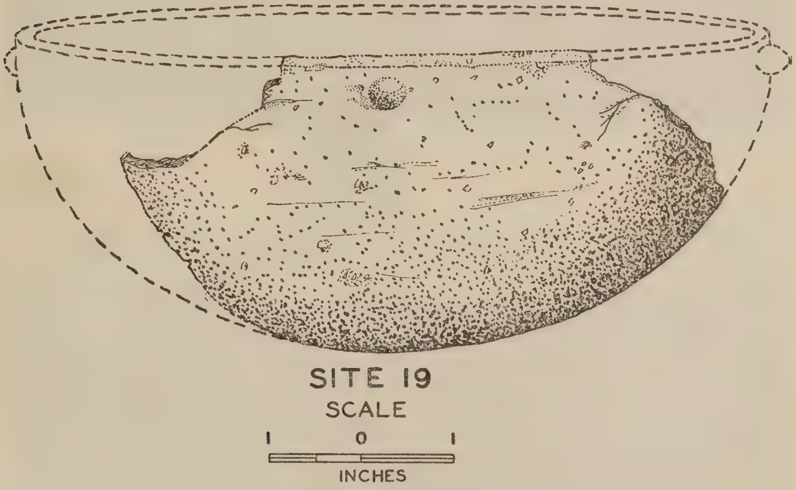

FIGURE 70.—Drawing restoration of bowl.

CONCLUSIONS

In the discussion of Site No. 10 the presence there of pit burials of bodies in sitting posture has been discussed. It was pointed out that this practice seems to very closely resemble the practice of some of the members of the Creek Confederacy, as reported by several travelers about 1750 or later.

In Site No. 19, of the 49 burials above the town house floor, 2, and perhaps 3, were of the sitting-posture pit type of burial and quite similar to those found at Site No. 10, Mound No. 2.

As previously referred to under Site No. 10, Bushnell[2] regards the custom of placing strips of wood or bark over and under the body at time of burial as a custom common to the Creeks. Of this he says:

> It is possible within this same region to trace another custom from historic back into prehistoric times, and whenever this may be done it tends to make more clear the customs of the inhabitants of ancient America at the time of the coming of Europeans.

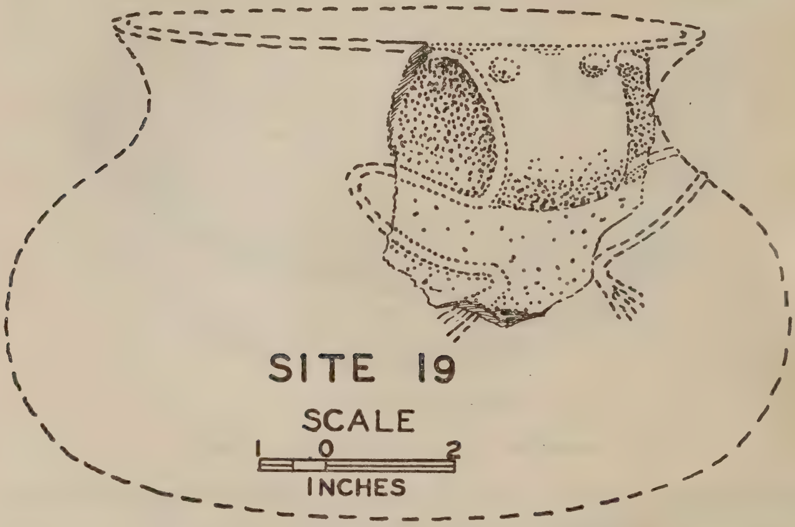

FIGURE 71.—Drawing restoration of vessel.

About the year 1730 a small group of Creeks, together with a few Yamasee, all belonging to the same linguistic family, settled on the south or right bank of the Savannah, at a place now known as Yamacraw Bluff, within the limits of the present city of Savannah. Their chief was the famous Tomochichi, who, together with others, later accompanied Governor Oglethorpe to England. While there during the year 1734 a member of the party died, and "previous to interment in the churchyard of St. John's, Westminster, the body was sewn up in a blanket and bound between two boards." (Jones.) It was placed in a grave, together with many ornaments and other objects. Moore drew attention to the occurrence when describing burials encountered by him in a mound on Creighton Island, McIntosh County, Ga., only a short distance south of Savannah, and consequently not far from the former village of Yamacraw Bluff. He remarked

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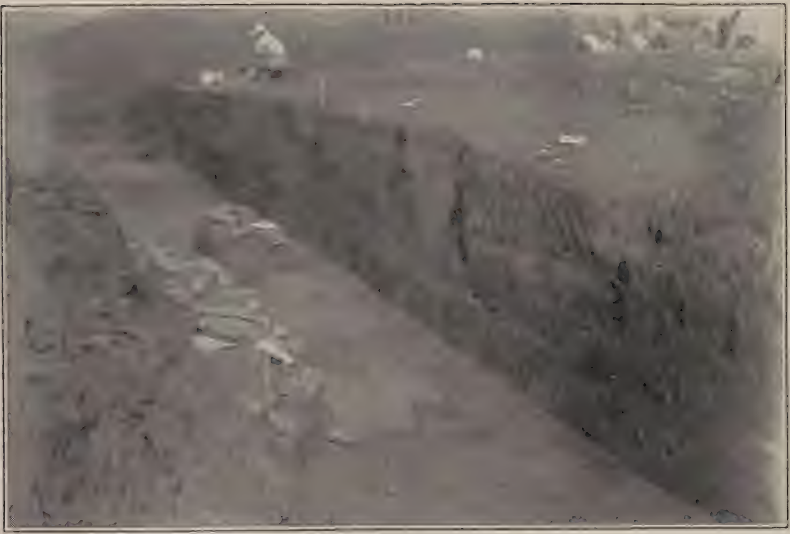
[2] Bushnell, 1920, p. 114. In this section, Bushnell refers to Moore, Clarence B., Certain Aboriginal Mounds of the Georgia Coast, p. 30; and to Jones, Charles C., Jr., Antiquities of the Southern Indians, pp. 185–187.

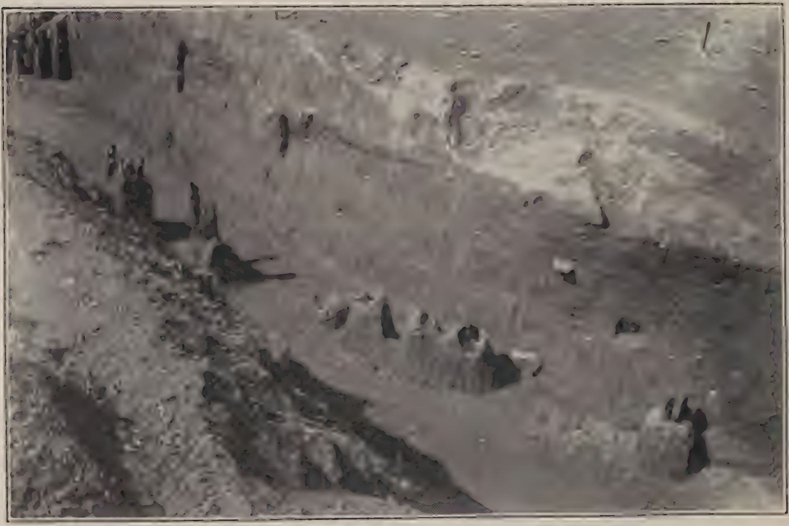
a. Cox Mound in distance. Site No. 19.

b. View up Clinch River from mound. Site No. 19.

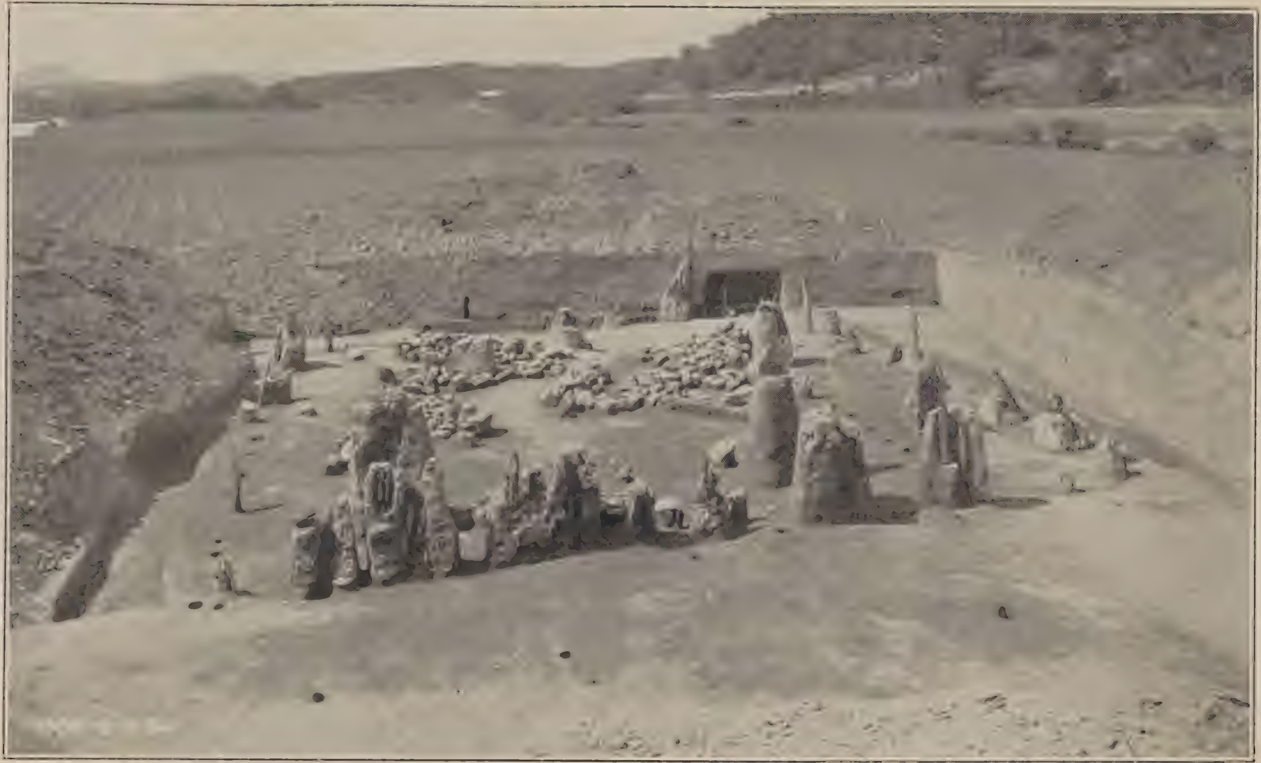
c. Mound staked off. Site No. 19.



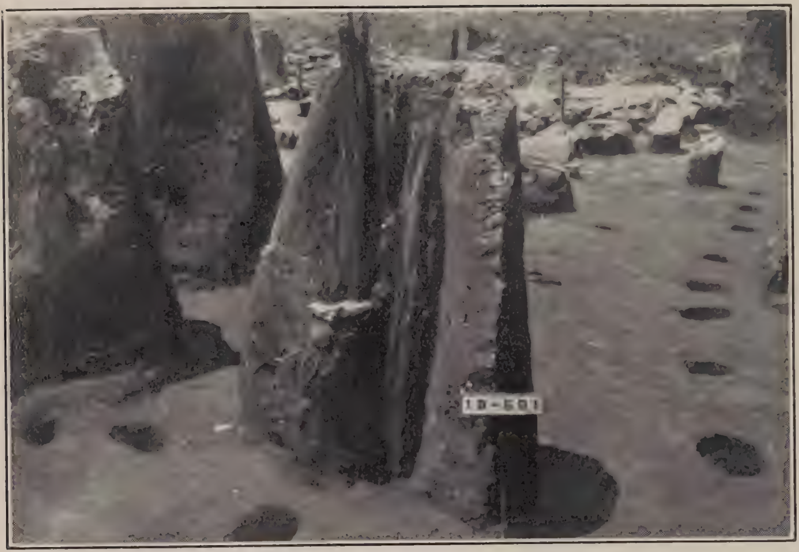
a. Wall 5.0–5.6 from southeast. Site No. 19.



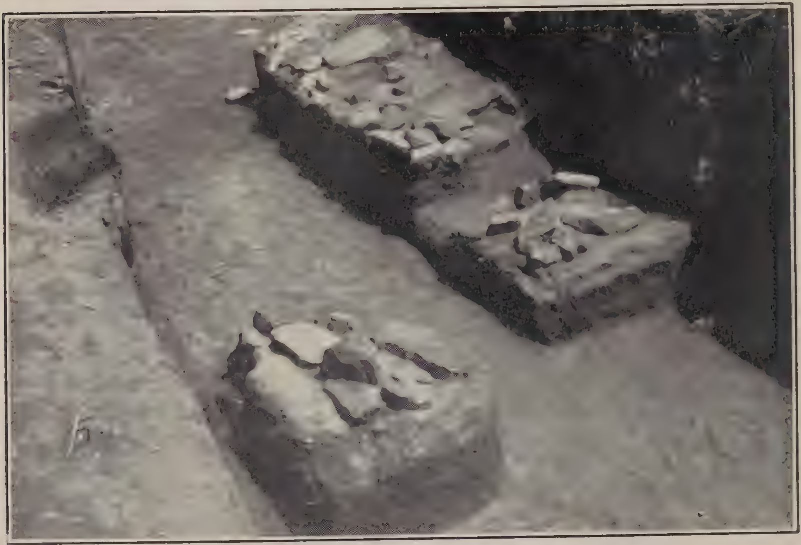
b. Wall 1.1–4.1, showing cedar post. Site No. 19.



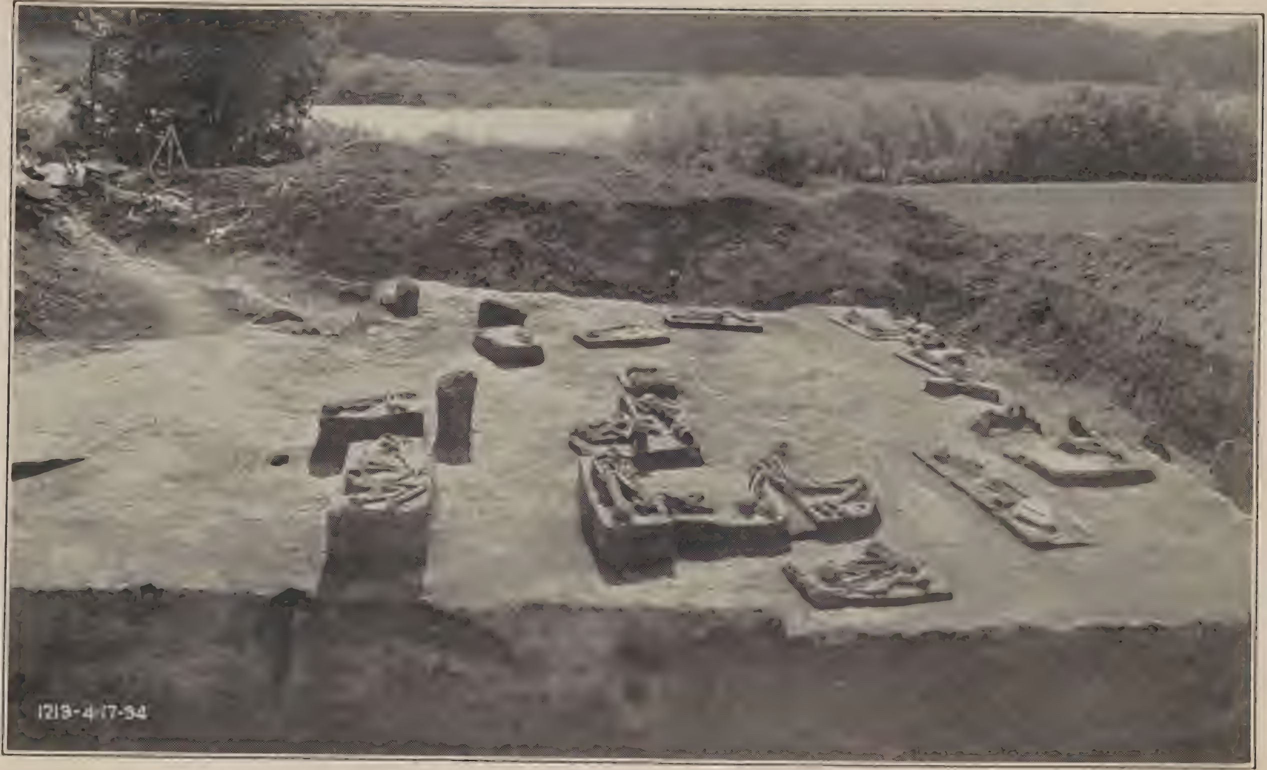
Primary floor of mound. Site No. 19.



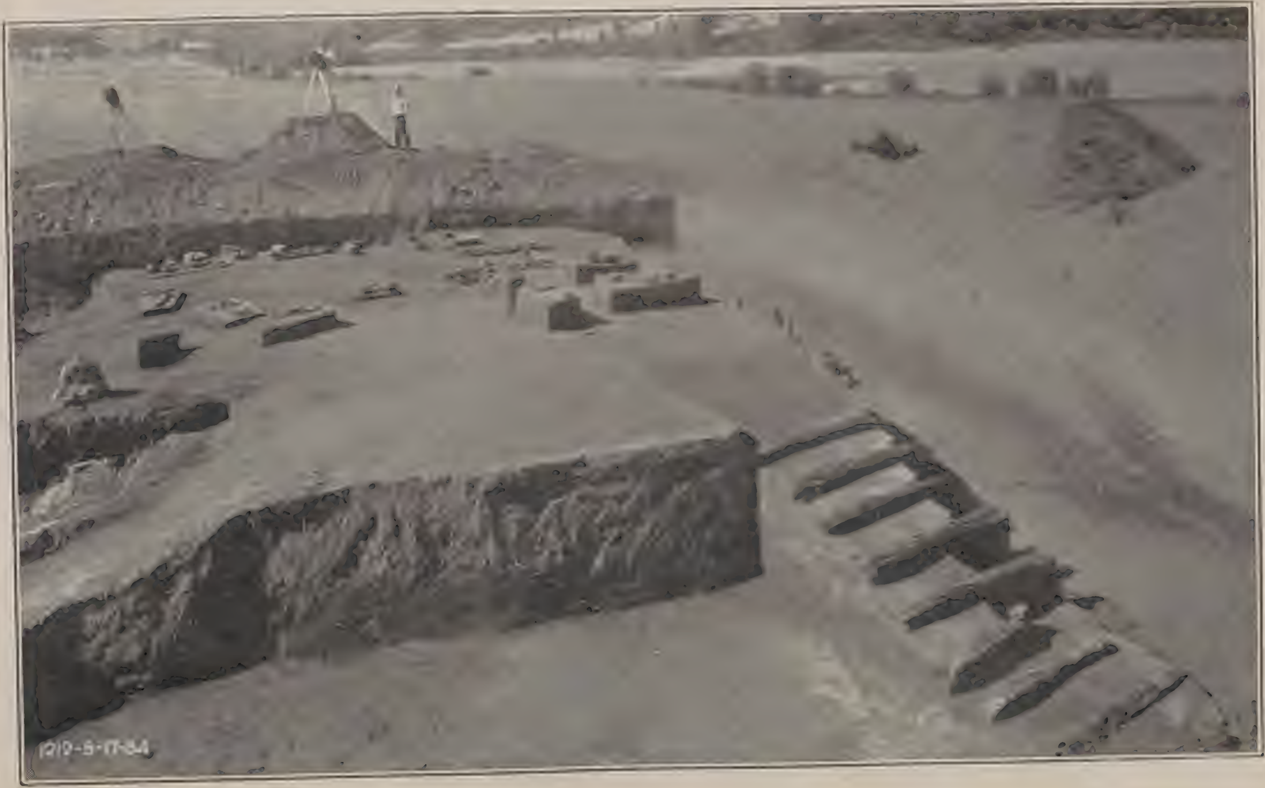
a. Posts of primary and secondary structures in relation. Site No. 19.



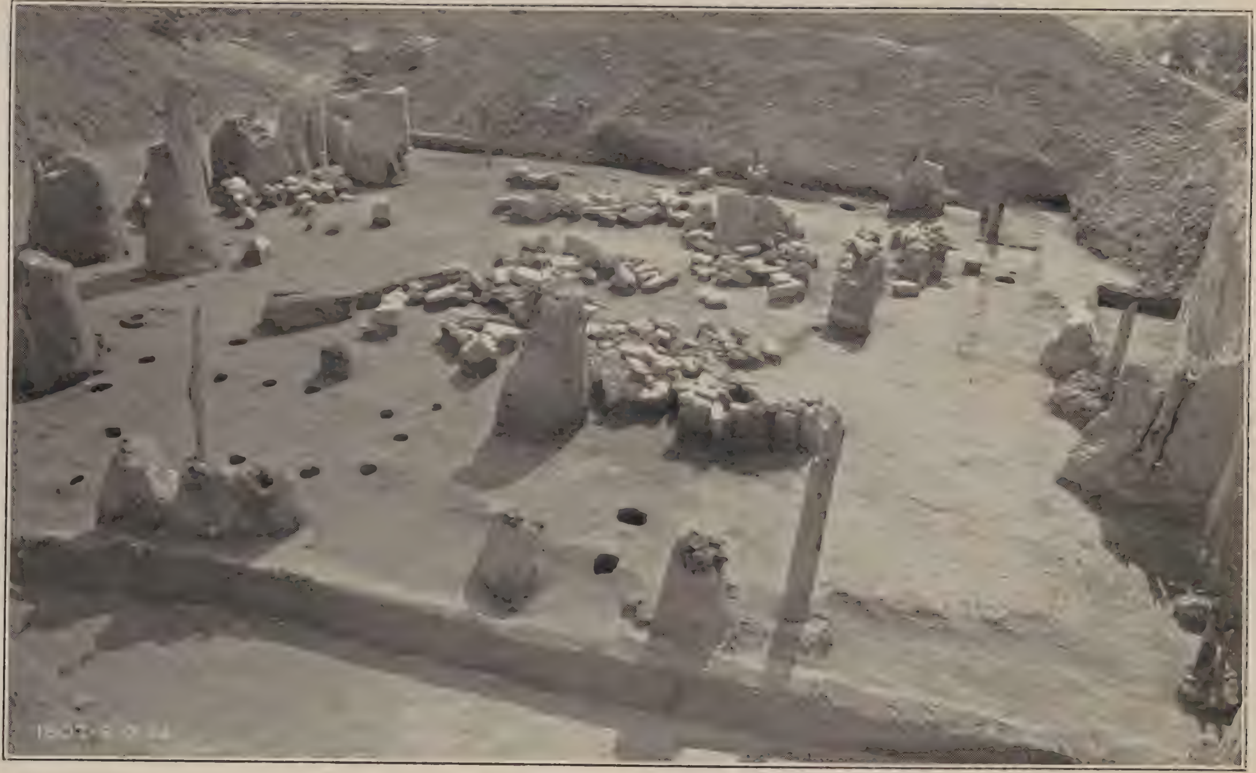
b. Rock piles. Feature No. 1, Site No. 19.



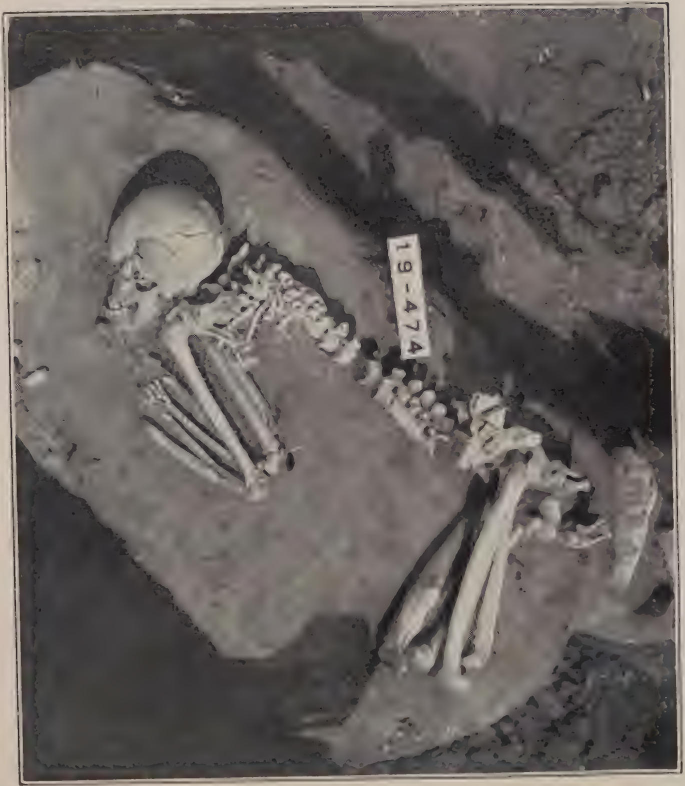
Eighteen burials above town-house floor. Site No. 19.



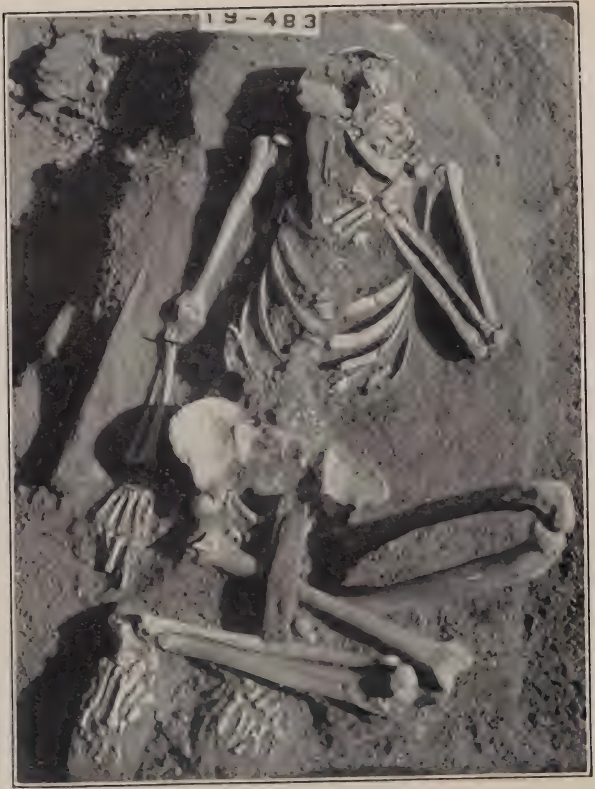
Log steps. Feature No. 3, Site No. 19.



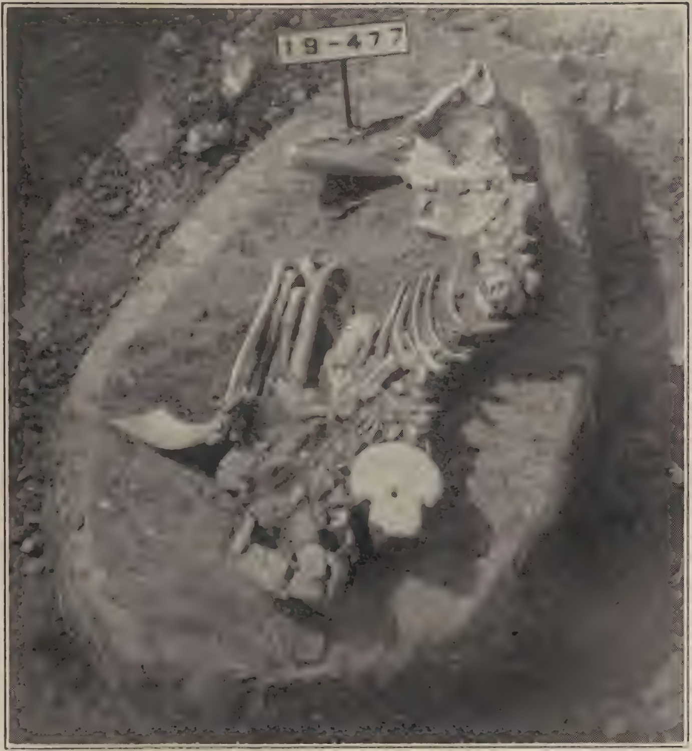
Stone pile on floor of mound. Feature No. 4, Site No. 19.



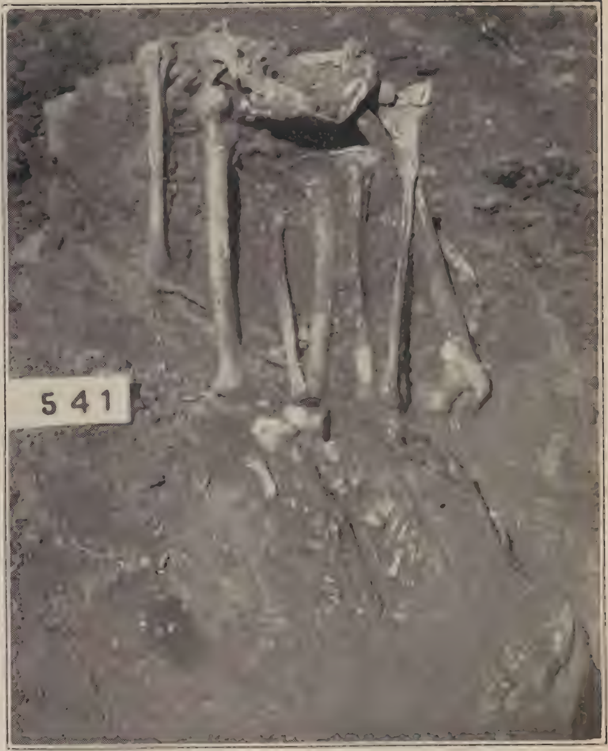
a. Burial No. 1, Site No. 19.



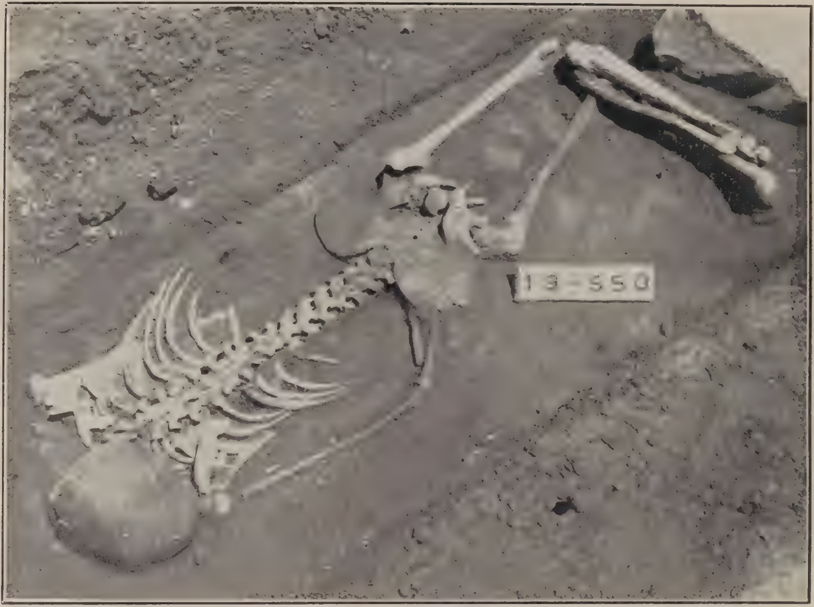
b. Burial No. 14, Site No. 19.



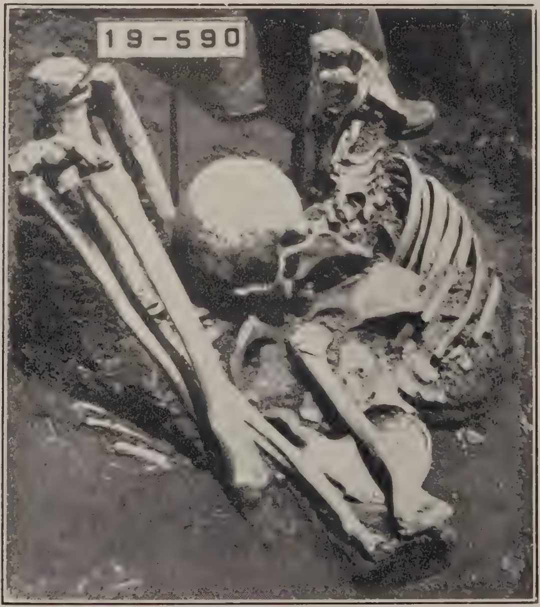
a. Burial No. 18, Site No. 19.



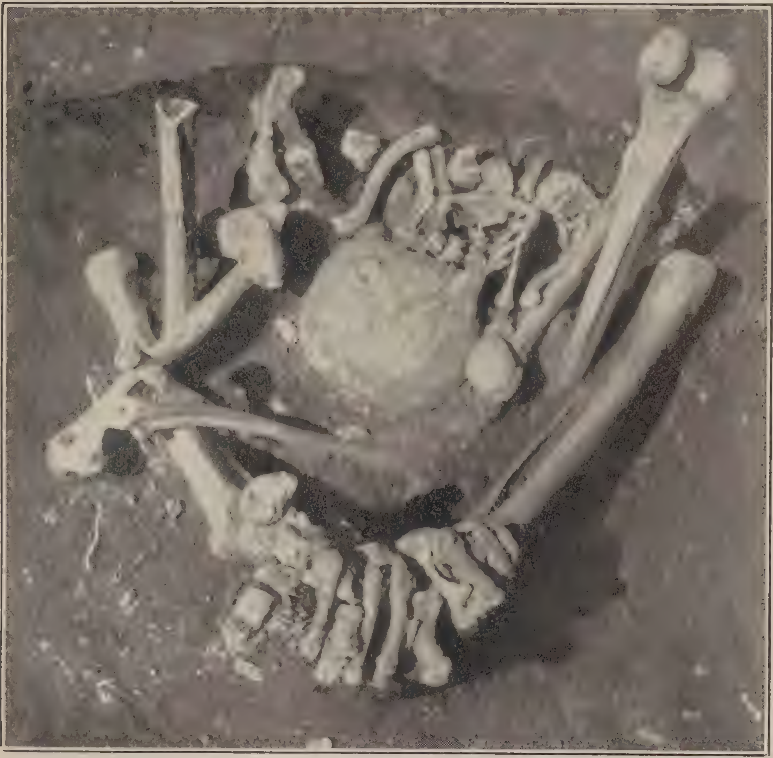
b. Burial No. 23, Site No. 19



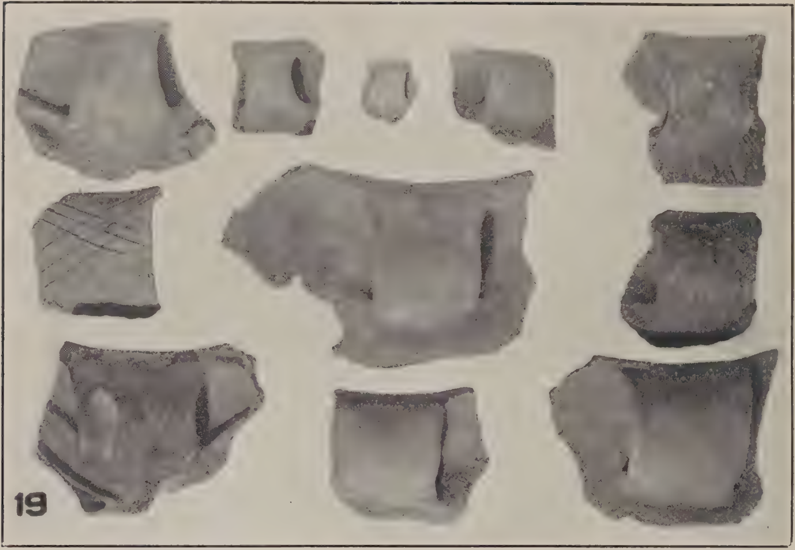
a. Burial No. 32, Site No. 19.



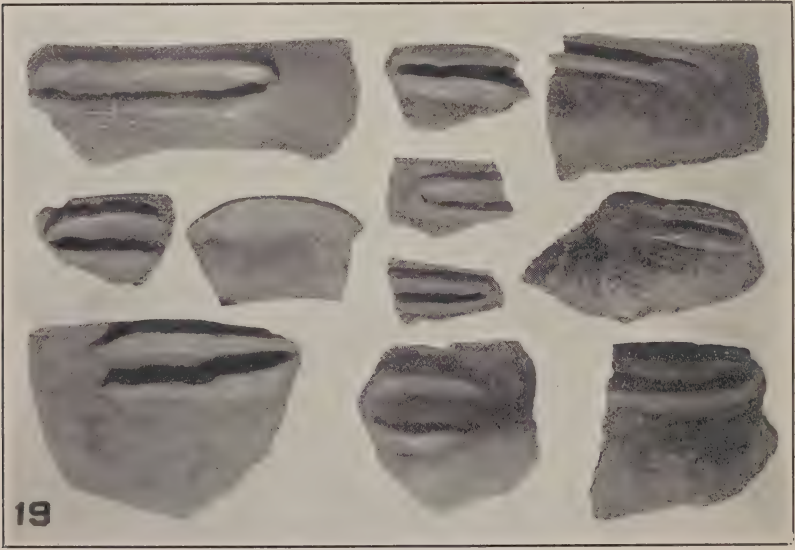
b. Burial No. 49, Site No. 19.



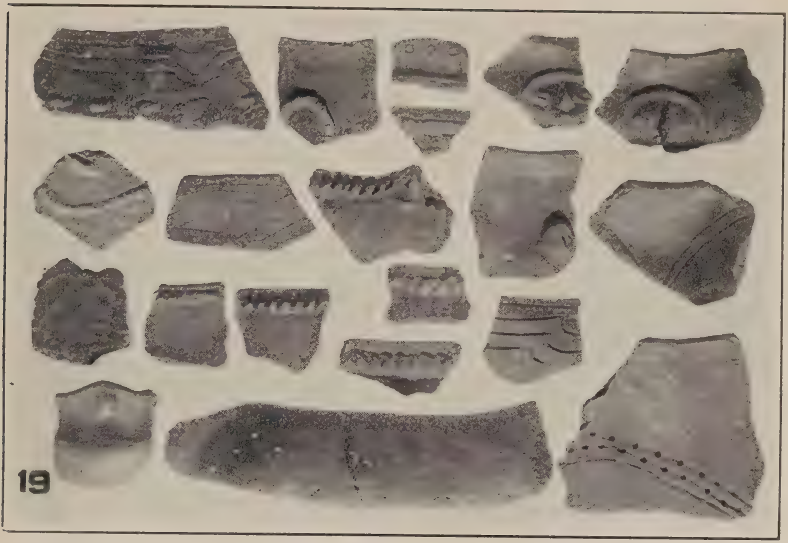
Burial No. 39, Site No. 19.



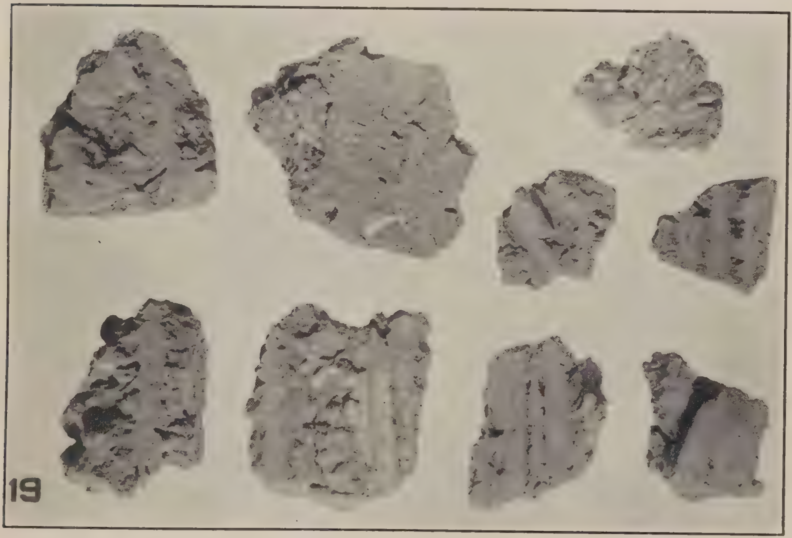
a. Strap-handle variations. Site No. 19.



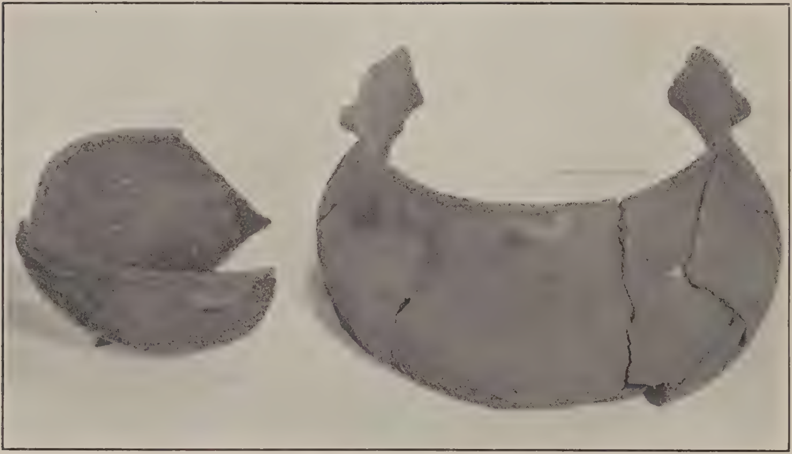
b. Limb portions of conventionalized frog-effigy vessels. Site No. 19.



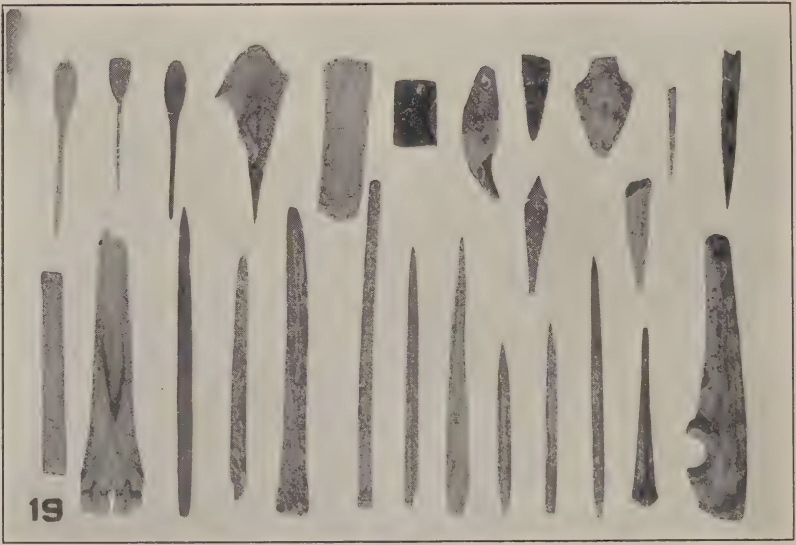
a. Variations on decorated jars and bowls. Site No. 19.



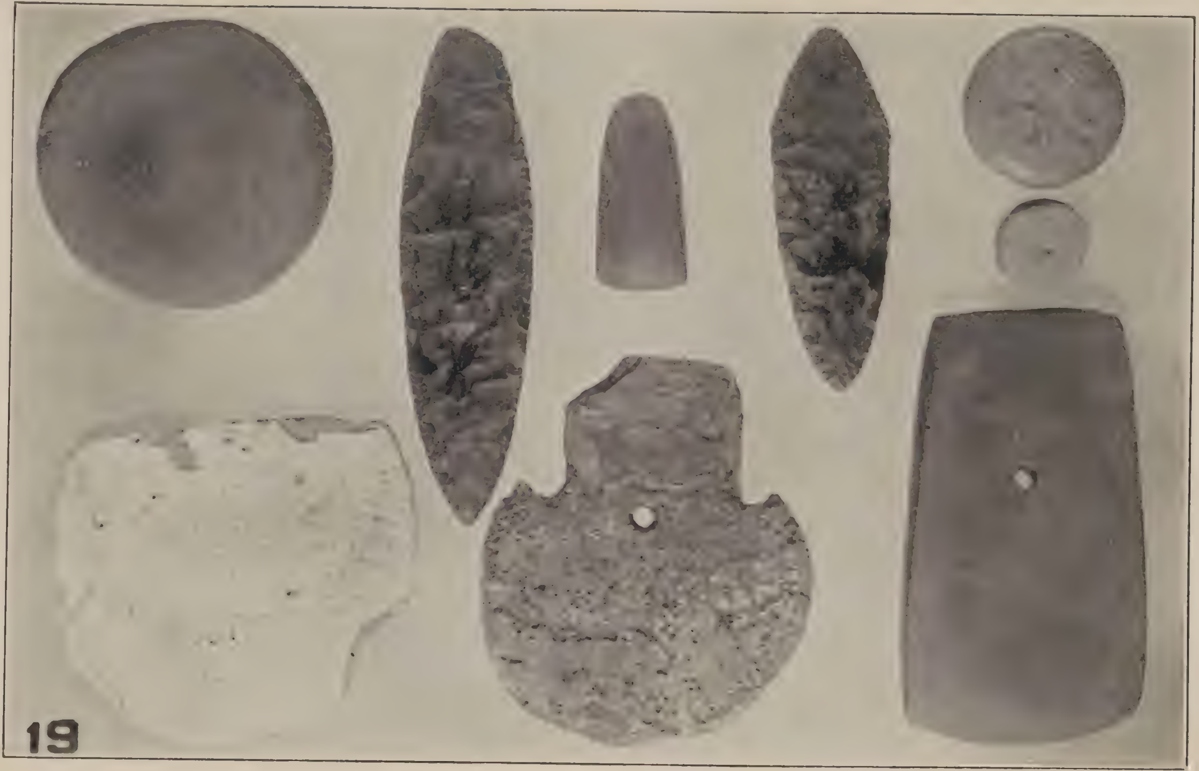
b. Burned clay on cane. Site No. 19.



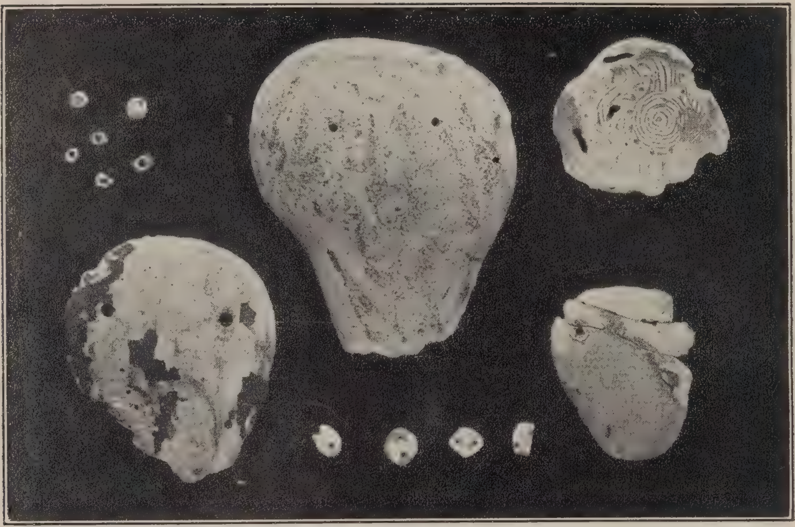
a. Crushed vessels. Site No. 19.



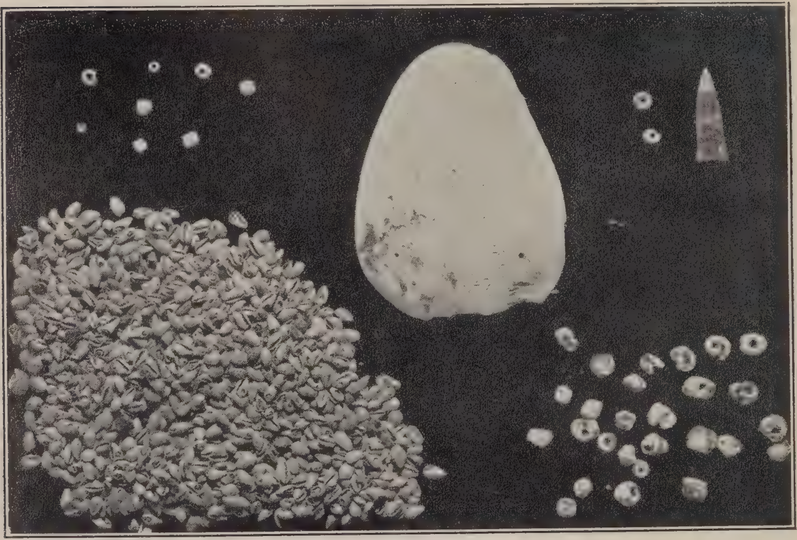
b. Bone artifacts. Site No. 19.



Stone artifacts. Site No. 19.



a. Shell gorgets. Site No. 19.



b. Beads and gorgets. Site No. 19.

on the discovery of traces of wood associated with the skeletal remains, and said in part: "In seven cases layers of decayed wood or bark, occasionally showing marks of fire, lay above human remains, and in two cases above and below." (Moore.) There is little doubt of these mound burials having been similar, in all essential details, to that of the Indian who died in London in 1734. And although it is not possible to determine the exact age of the mound on Creighton Island, nevertheless it is reasonable to attribute it to a period after the coming of the Spaniards to the coast of Florida.

It should be pointed out in this connection that Burials Nos. 1, 7, 10, 23, and 24 all certainly showed strips of bark or wood had been used to line the grave and strips of similar materials had been placed longitudinally above the body. This wood and bark was very poorly preserved, but of its existence and placement there can be no doubt. Thus a second custom, known to ethnologists as a Creek burial custom, from about 1734, has been definitely established as existing in the Norris Basin. It is not to be presumed that this statement would imply that the builders of Site No. 19 were Creeks. It is just possible that had not the decay of wood strips been so rapid a greater proportion of the undisturbed burials on this site might have this type of bark and wood strip burial.

SITE No. 20.—AUSMUS BURIAL CAVE

On the John Ausmus farm near Speedwell, Claiborne County, Tenn., 0.5 mile south of the two mounds previously designated in this report as Site No. 10, is a small limestone cavern which appears to have originated with a surface sinkhole. Its small size—namely, 50 feet in length by 6 to 8 feet in width and 8 feet in vertical height—was hardly adapted to the requirements of a permanent place of habitation.

Following a vertical drop of 7 feet, the cavern extended in a westerly direction. At a distance of approximately 50 feet the passage narrowed down to such an extent that further investigation was impossible. The mouth of the cave was situated 300 yards from Davis Creek, near the crest of a low ridge which sloped gradually upward from the creek.

A considerable amount of soil, rock, and wood had washed into the cave. The removal of some of these materials soon brought to light human skeletal remains. All talus was then removed and the work of excavating begun at a point 15 feet from the entrance. Test pits sunk beyond that point failed to show anything other than a hard-clay deposit.

It soon became evident that the cavern had served as a mortuary. A mass of skeletal material of adult males and females, as well as children, was encountered to a depth of about 4 feet, principally along the left-hand side, looking toward the entrance. The hard-clay subsoil sloped from the right-hand to the left-hand side of the cave; which fact undoubtedly offers an explanation of this peculiarity. If the bodies had been tossed in from above all would have rolled toward the left wall of the cave.

Not one skeleton was found entirely in anatomical order, as shown in plate 122, *a*. It was, however, possible to determine that corpses had been deposited in the cave rather than bundle reburials or the remains from another mortuary. In one instance more than half of the skeleton of a child was found in anatomical order. Associated with it were several olivella-shell beads. Occasionally femora, tibiae, humeri, radii, ulnae, and ribs were in recognizable anatomical order. Of note, also, was the fact that the skulls, for the most part, were farther down the declining slope than the long bones which appeared to be associated with them. This would lead to the assumption that the corpses were cast into the cavern head foremost. Under such conditions, skulls, when detached, would roll to the lowest part of the cavern floor.

Two male crania recovered from what was roughly estimated to be about 20 burials were definitely dolichocephalic, by casual observation.

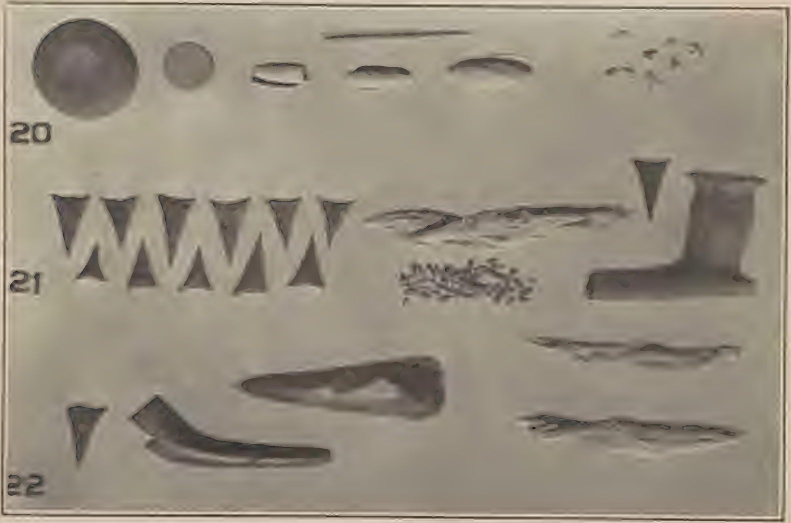
No artifacts were found other than the beads previously mentioned, the two discoidals, and the bone implement illustrated in the top row of plate 122, *b*.

SITE No. 21.—CRAWFORD FARM MOUNDS

The farm of Mr. Samuel Crawford lies along the north side of Clinch River, near Scarboro, Anderson County, Tenn. About a quarter of a mile north of the river and just opposite to Copper Ridge in a cultivated field were two mounds. These mounds, the larger one designated No. 1 and the smaller one No. 2, have never been cultivated. They once had large trees growing on them. Some 10 years ago these trees were cut, and only large stumps remain. Second growth, watersprouts, and weeds still covered the mounds, as shown in plate 123, *a*. The difference in size of the two mounds is shown in plate 123, *b*, which was taken after the mounds had been cleared of all undergrowth. Sometime about 1926 the larger mound, No. 1, was disturbed by residents of the vicinity. A trench, which reached almost to the center of the mound, was dug into it from the south side.

Mound No. 1 was 45 feet in diameter and Mound No. 2 was about 35 feet in diameter. The centers of these mounds were about 60 feet apart, Mound No. 2 being southwest of Mound No. 1. Because of

a. Mingled skeletons on cave floor. Site No. 20.



b. Artifacts from Sites Nos. 20, 21, and 22.

their proximity, the same coordinate system was used in staking. They were staked in 5-foot blocks, as shown on ground plats.

Excavation was carried well down into the hardpan. The original humus line was very plain in places, faint in others, and missing in others. The absence of the humus line was especially noticeable near the edge of the mound. This may indicate that the burials which lay on the humus itself, or slightly within the humus, were covered with dirt (once humus) that was dug from around the surface, before the mound proper was built. Weight is added to this possibility by the fact that the humus line where most plainly seen was quite thick, being as much as 20 inches or more.

Vertical faces were carried throughout the entire excavation of the mounds. Test pits were sunk from 18 inches to 24 inches in the hardpan at each 5-foot block to seek for disturbance below the floor level. Both mounds were composed of unstratified sandy clay.

MOUND NO. 1

Mound No. 1 was 45 feet in diameter. The only feature other than the burials found in this mound was a crude basin, or a burned area, slightly below the original humus line, under Mound No. 1. This basin was 10.5 feet by 8.8 feet. It was dark red in color and the clay had been burned to a depth of from 4 to 6 inches. Some charcoal was present on the burned clay and some large samples of the burned wood were taken for dating purposes. It was thought to be precedent to the mound, and may indicate that the mounds were erected on a village site.

BURIALS

All burials were in a very poor state of preservation. Only a few fragmentary bones remained, in most cases, to indicate the presence of a skeleton. Twenty-three burials were located in Mound No. 1 and nineteen burials in Mound No. 2. Faint white areas occurred here and there throughout the earth, which seemed to indicate the presence of former burials now totally disintegrated. If these faint white spots are indicative of former burials there were once perhaps as many more burials in these mounds as have been recorded.

Burial No. 1.—On the original ground surface, 18 inches above the hardpan, a portion of a skull and pieces of long bones were found. The preservation was so poor that the disposition and orientation could not be determined. Tree roots extended through the burial and a tree stump grew near the skull.

Burial No. 2.—Forty-four inches above the original hardpan a few fragmentary bones were found.

Burial No. 3.—Thirty-eight inches above the original hardpan a few decayed bone fragments, the residue of a skeleton which had nearly disintegrated, were found.

Burial No. 4.—Twenty-four inches above the original hardpan traces of a skeleton were distinguished by crumbling bones.

Burial No. 5.—Thirty inches above the hardpan traces of large bone fragments were found.

Burial No. 6.—Fourteen inches below the surface of the mound a very poorly preserved skeleton lay beneath a stump. A root 3 inches in diameter had grown through the skull.

Burial No. 7.—Fourteen inches below the mound surface the remains of a skeleton were found. The preservation was so poor that the disposition of the body could not be determined. The burial was interpenetrated by a maze of roots. The bones were friable. Some small shell beads were found about the neck of the skeleton.

Burial No. 8.—A burial, indicated by decayed and fragmentary bones of large size, was found 23 inches above the hardpan.

Burial No. 9.—Thirty-eight inches above the hardpan a number of fragmentary bones were found. Only the occipital bone could be recognized.

Burial No. 10.—Crumbling particles indicated the presence of a burial. The skull could be recognized, but was badly disintegrated.

Burial No. 11.—A few long-bone fragments and the decayed remnants of a skull were found 14 inches above the hardpan. A hole in the earth indicated the place of the head.

Burial No. 12.—The long bones of a skeleton, found 12 inches above the hardpan, indicated the presence of a burial.

Burial No. 13.—A fully flexed skeleton was found 56 inches above the hardpan. The body had been placed on the left side, with the head to the south and the face to the west. The preservation of the bones was sufficiently good to trace the skull, the spinal column, the pelvis, the arms, and lower limbs. Plate 124, *a*, shows Mound No. 1, with a vertical profile near the center. The stake lying on this vertical wall points to a hole. This is the skull mold of Burial No. 13.

Burial No. 14.—A collection of poorly preserved bone fragments was found 64 inches above the hardpan.

Burial No. 15.—Forty-eight inches above the hardpan the remains of a skeleton were found. The long bones had disintegrated to powder, but portions of the cranium were identified.

Burial No. 16.—Fragmentary bones at a height of 32 inches above the hardpan indicated the presence of a burial.

Burial No. 17.—A poorly preserved skeleton was found 27 inches above the hardpan. A skull and two tibia were recognizable.

Burial No. 18.—A collection of bone fragments, 14 inches above the hardpan, indicated the presence of a burial. No skull was found.

Burial No. 19.—Under four flat stones which were laid close together, edge to edge, a collection of fragmentary decayed bones was found. The stones were 34 inches above the hardpan.

Burial No. 20.—A few long-bone fragments 14 inches above the hardpan marked the location of a burial. A broken flint arrow point was found in association.

Burial No. 21.—Thirty-four inches above the hardpan two femora and other bones were found. The skull was missing.

Burial No. 22.—At 39 inches above the hardpan portions of a skull and a few other bone fragments were found in association with a broken arrow point.

Burial No. 23.—The partially flexed burial of an adult, lying on the right side with the head to the west, was found. The preservation, although poor, was the best of any found in the mound.

Except for the shell beads found around the neck of the skeleton in Burial No. 7, and an arrow point found in Burial No. 20, the burials seem to have been devoid of all artifacts. In the general digging a small fragment of broken stone pipe was found. The earth of this mound was a clean sandy clay, yellow in color. It contained no potsherds or other evidence of having been gathered from a village site. Seemingly the mound was erected out of "clean" clay gathered from a natural source, and there was thus no refuse material incorporated in the mound.

Mound No. 2

Mound No. 2, the smaller of the two mounds on this site, was 30 feet in diameter and about 4 feet high at the center, as shown in plate 124, *b*. The cultivated field in which the mound lay sloped gently to the south, and erosion of this mound had taken place chiefly in that direction. It was built of clean yellow sandy clay on a humus layer which was fairly well defined and about 10 inches thick. Other than burials, there were only two features which required recording.

Feature No. 1.—Feature No. 1, which is shown in plate 125, *a*, was a cache of 11 flint arrow points, carefully packed between the two halves of mussel shell. The arrow points were in perfect condition but the shell was badly decayed and disintegrated when first touched by the workman who found it. This cache was 8 inches above the original hardpan surface and was southwest from stake 10.16. It was seemingly a separate deposit in the mound and was not found to be in any observable association with a burial. The arrow points were beautifully chipped, triangular in form, with broad concave bases. They were quite thin and all were perfect when found. However, even though carefully packed in the field, one had a broken corner when received at the laboratories, which emphasizes how fragile they were because of their thinness. They are shown for comparison in plate 122, *b*.

Feature No. 2.—This was a charred log incorporated in the mound near stake 9.4. This log fragment was 4 feet long and nearly 2 feet in diameter and was only about 6 inches above the hardpan at its lowest end. It was badly decayed.

BURIALS

Burial No. 1.—A fully flexed adult buried on the right side, with the head to the southwest, was found 34 inches above the hardpan. A tree stump grew near the skull and roots had penetrated the burial throughout.

Burial No. 2.—Some 6 inches above the hardpan the fragments of a skull and large bones were found. All the bones were poorly preserved. A broken pipe resting in an upright position was found in association. The pipe is shown in plate 122, *b*, central row.

Burial No. 3.—On the hardpan surface a burial represented only by a fragmentary skull was found.

Burial No. 4.—Some 4 inches above the hardpan a fragmentary skull and mandible indicated the presence of a burial. A flint arrow point was found in association.

Burial No. 5.—This burial was near the surface of the mound. Two skulls and fragmentary long bones were apparent. One flint arrow point was found in association.

Burial No. 6.—Some 27 inches above the hardpan two skulls and some fragmentary long bones were found. Near them was a charred log. They were not far from Burial No. 1 and may have been associated with it.

Burial No. 7.—Teeth and fragmentary bones were found under a stump 32 inches above the hardpan. The other bones had disintegrated.

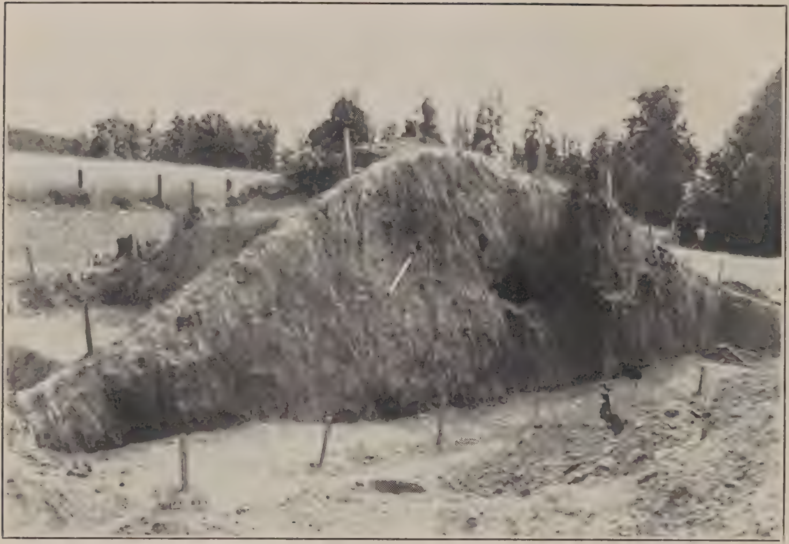
Burial No. 8.—At a point 20 inches above the hardpan a fragmentary skull and long bones were found under a stump. They had been much disturbed by the roots.

Burial No. 9.—Fragments of skull and much disintegrated bone were found 24 inches above the hardpan.

Burial No. 10.—Six inches above the hardpan three flat stones were found in a row and touching each other. Fragmentary bones were found under the stones, and at the end of the row of stones fragments of a skull remained.

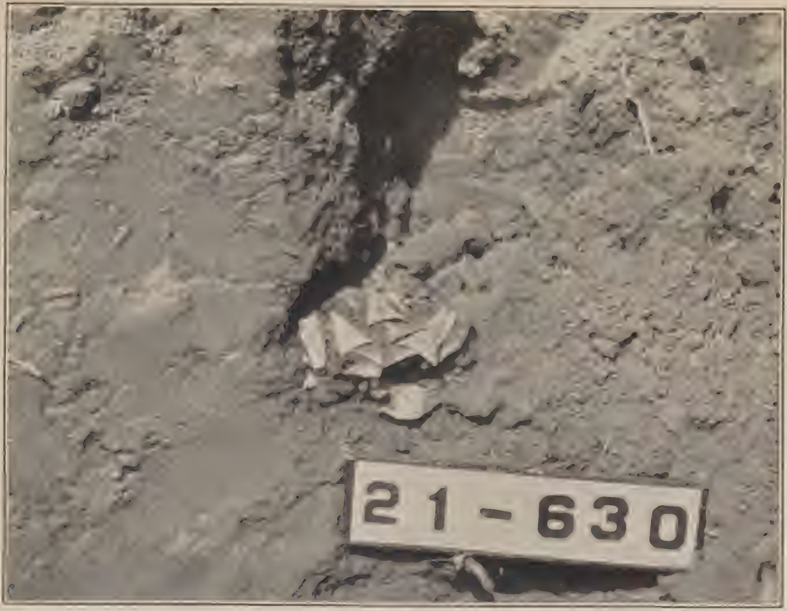
a. Before clearing. Site No. 21.

b. After clearing. Site No. 21.

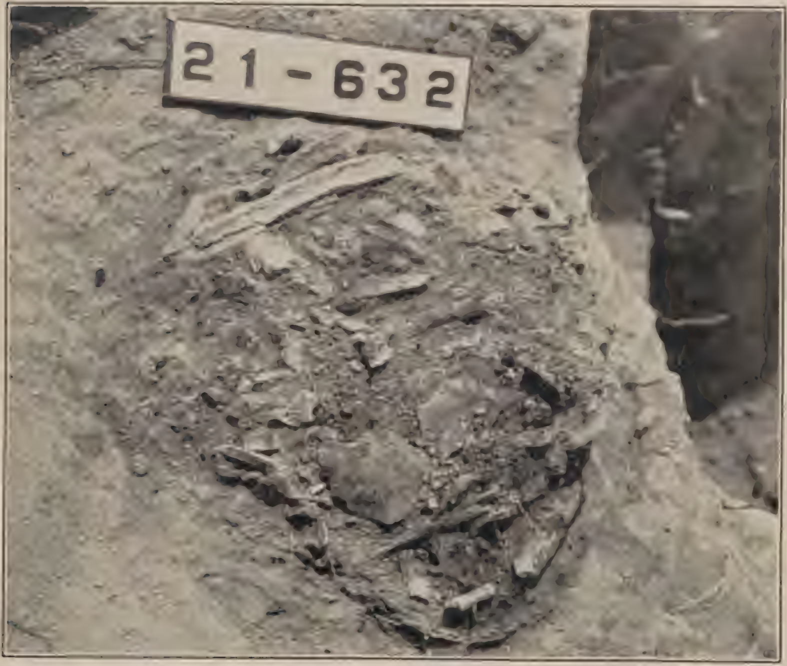


a. Vertical profile, showing Burial No. 13, Mound No. 1, Site No. 21.

b. Profile through center of Mound No. 2, Site No. 21.



a. Cache of flint arrow points. Mound No. 2, Site No. 21.



b. Pit containing partially cremated remains. Burial No. 11, Mound No. 2, Site No. 21

Burial No. 11.—Just below the mound surface a pit 15 inches by 11 inches, filled with charred skeletal remains, was found, as shown in plate 125, *b*. This burial was cremated before being placed in the mound, since the earth showed no evidence of burning. No lines could be determined that would indicate an intrusive burial. Under this burial was found the central column of a conch shell, as shown with the other artifacts from this site.

Burial No. 12.—A poorly preserved skull and fragmentary long bones were found at 36 inches above the hardpan.

Burial No. 13.—Sixteen inches above the hardpan a portion of a skull was found with the other bones indicated only by lines of powdered bone fragments.

Burial No. 14.—Fragmentary bones were found 28 inches above the hardpan with some charcoal in association.

Burial No. 15.—Just below the surface of the mound were found the fragments of a skull and mandible, in association with one poorly preserved shell bead.

Burial No. 16.—This burial was shown only by fragments of skull and teeth. It was 26 inches above the hardpan. Some small bits of charcoal were found in association.

Burial No. 17.—Twenty-six inches above the hardpan a flexed burial with the head to the east was found. The preservation of the skull was fair; preservation of the balance of the skeleton was very poor.

Burial No. 18.—At 24 inches above the hardpan a fragmentary skull was found.

Burial No. 19.—Within an area 4 feet by 2 feet and 3 feet above the hardpan there were scattered teeth and skull fragments with other bones poorly preserved, which seemed to indicate that two bodies had been buried here.

Conclusions

These mounds were obviously "burial mounds." The condition of the burials found in them may be due to great age. However, there was no evidence to show that bodies in the flesh had been deposited in these mounds and that the present condition had been due to long decay.

The remaining portions of each skeleton were very fragmentary, and in several burials the remains of more than one individual was included. This would seem to suggest the deposit of bundle burials of bones, which would in part account for the condition of the burials. There was an entire absence of burial offerings, with the possible exception of the one cremated burial, which had a fragment of marine shell under it.

Site No. 22.—FREEL FARM MOUND

The William Freel farm lies on the west side of Clinch River about 2 miles southeast of Scarboro, Anderson County, Tenn.

The particular site referred to herein lies about 1,200 feet from the Clinch River, in the bottom of a rather wide valley with ridges to the east and west. The east ridge begins to rise abruptly about 300 feet from the mound, while the west ridge rises gradually to a peak about 3,600 feet away. The mound lies on land which has been in the possession of the Freel family for over 135 years, the present owner being a member of the fourth generation to own and cultivate this farm. The field surrounding the mound has long been in cultivation, but the mound itself has never been disturbed. The surface of the mound was covered with undergrowth and had eight large trees growing on it; the largest, a white oak, measured 23 inches in diameter. The roots of the trees had penetrated the entire mound. This root penetration of the mound was the cause, in large measure, of the poor preservation of the skeletal remains found. In most cases the skeletons were so poorly preserved as to make it impossible to determine exactly the original placement of the bodies.

The mound was a circular earth mound 40 feet in diameter and 8 feet above the original ground surface at its midpoint. It was built, in the main, of hard-packed yellow clay containing scattered bits of charcoal. No other evidence of midden material appeared and no potsherds were found. It was evidently erected from clean clay brought on the site to cover bodies laid on the surface. The original surface floor of this mound is shown in plate 126, *a*. There was no evidence of grave excavation except in one central pit below the original surface of forest floor, in the center of the mound. This pit was 6 feet east and west by 5 feet north and south and 17 inches deep. Burial No. 17 had been placed in the pit and the body covered with large stones. These stones were piled up to form a flat circular pile, about 1 foot higher than the mound floor. This circular pile, shown in plate 127, *a*, was 16 feet 4 inches in diameter and constituted the outstanding feature of the mound. Burial No. 17, and the covering stones, evidently constituted the original increment in the construction of this site. The earth on top of these stones may have been increased in depth from time to time as other burials were added to the mound and covered over. However, no stratification was discernible and no evidence of intrusion was to be seen. Care was taken to maintain vertical profiles every 5 feet and to keep a clean floor in the trench going down to the hardpan. Wall 2.6–6.6 shows no suggestion of stratification. All burials were regarded, therefore, as inclusive. The ground plan of the mound is shown in figure 72. The mound was staked in 5-foot blocks and excavated by slicing in the usual way. A portion of the west side of the mound had been cut away to allow the passage of a country dirt road.

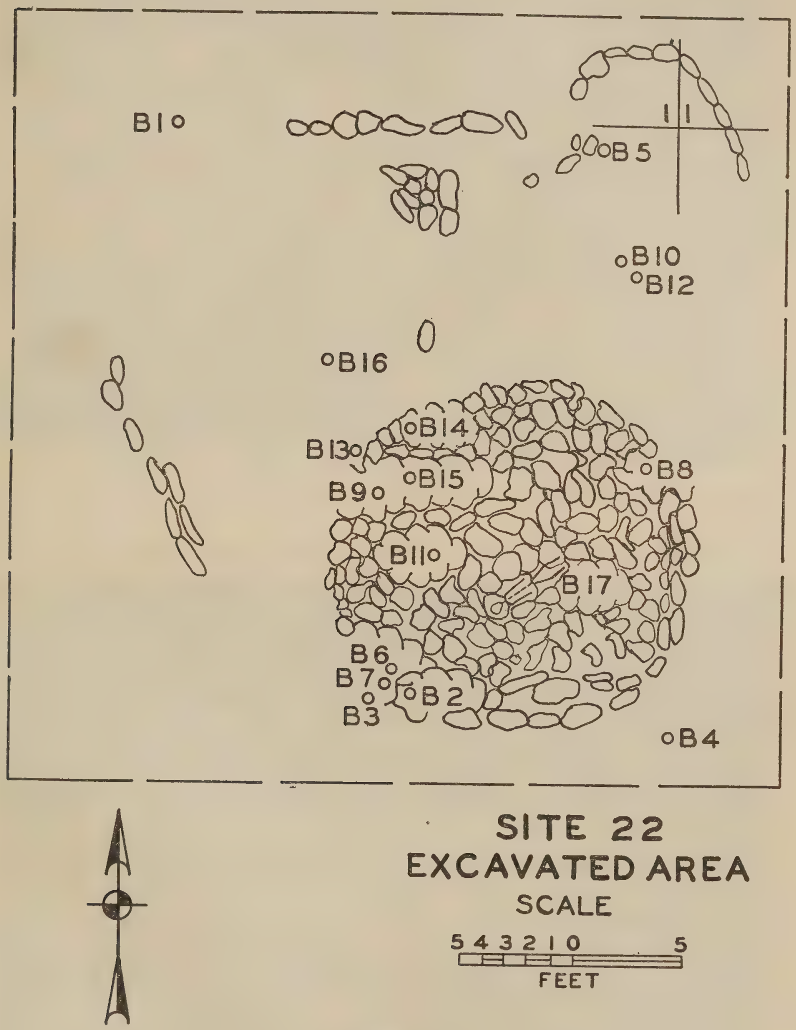

B1
B5
B10
B12
B16
B14
B13
B15
B8
B9
B11
B17
B6
B7
B2
B3
B4
SITE 22
EXCAVATED AREA
SCALE
5 4 3 2 1 0 5
FEET

Figure 72.

Burials

A total number of 17 burials was found. The burials were numbered as found and listed below in that order. Their horizontal positions are shown on the ground floor plat, figure 72.

Burial No. 1.—Thirteen inches above the original floor surface a fully flexed adult, with the head to the south, was found. The preservation of the material was poor, since the burial was exposed on the roadside by the erosion of the mound surface. A piece of drilled conch shell was found near the neck of the skeleton.

Burial No. 2.—On the ground floor of the mound a partially flexed adult, with the head to the north, was found.

Burial No. 3.—On the ground floor of the mound a partially flexed adult burial, with the head to the north, was found. The preservation of the skeletal material was poor.

Burial No. 4.—Eleven inches below the present mound surface the partially flexed skeleton of an adult was found. The head was to the south. The preservation of the skeletal material was poor.

Burial No. 5.—On the original ground surface a burial was indicated by the presence of some much-decayed bones. The orientation and disposition of the bones could not be determined.

Burials Nos. 6 and 7.—Portions of three bodies were found together. The nature of the burial was difficult to determine, for besides portions of an adult burial and a fragmentary skull there were portions of a child's skeleton and several teeth of a child. The head of Burial No. 6 was to the north and that of No. 7 was to the south. The poor preservation of the bones was due to the action of the roots of trees.

Burial No. 8.—Portions of a skull and the lower limbs of a fully flexed adult were found 22 inches above the original ground floor. The preservation of the bones was poor.

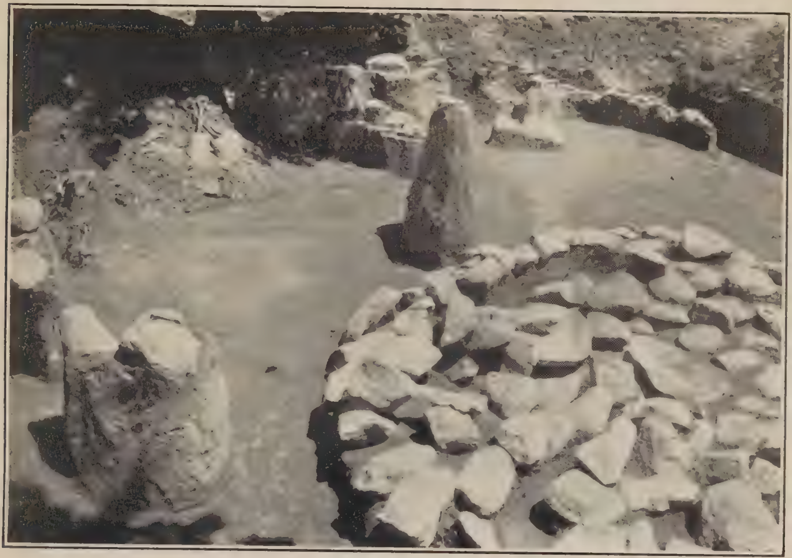
Burial No. 9.—Just below the mound surface the bones of an adult were found. The skeletal material was so nearly disintegrated that the disposition could not be determined. A flint spear point was found in association.

Burial No. 10.—At a depth of 10 inches above the ground floor a crushed skull was found beneath the base of a tree. No other bones were observable.

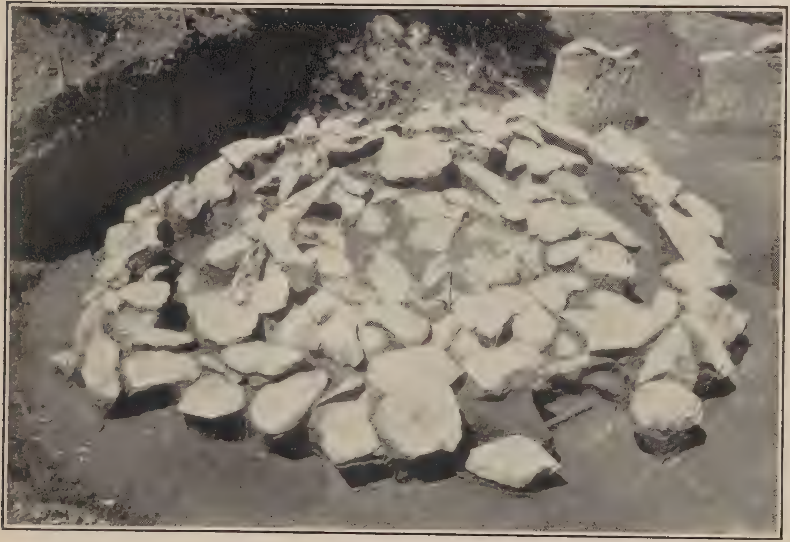
Burial No. 11.—Twenty inches above the ground floor the skull, ribs, and clavicle of an adult were found. All the bones were in very poor condition.

Burial No. 12.—A poorly preserved adult burial was found 18 inches above the ground floor. The burial may have been associated with Burial No. 11.

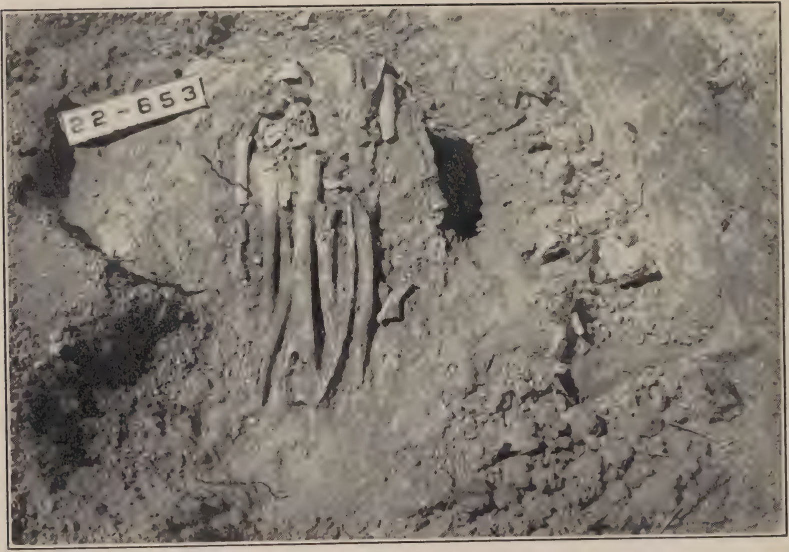
Burial No. 13.—Some 15 inches above the ground floor, in an area 20 inches by 10 inches, a burial of bones, seemingly not in anatomical order, was found. The teeth were found under the legs and under the pelvis. The burial had the appearance of a bundle burial of bones, as is shown in plate 127, *a*.



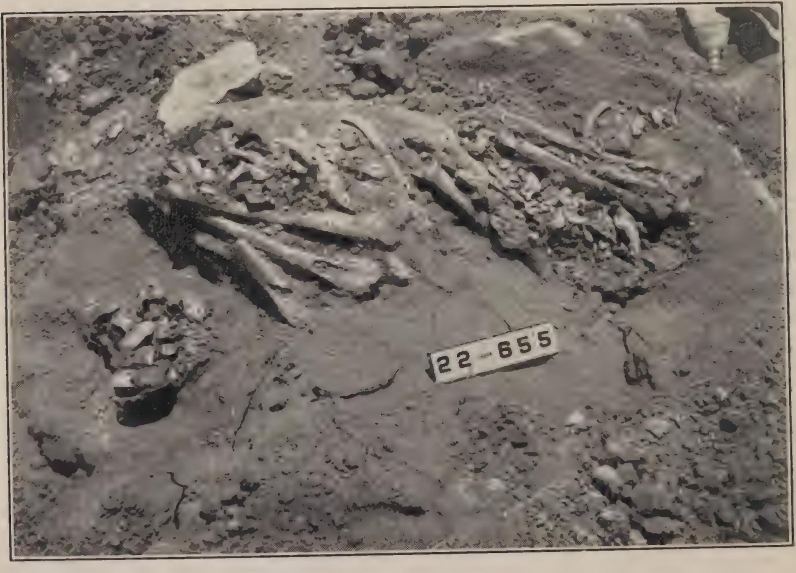
a. Cleared mound floor. Site No. 22.



b. Circular pile of stones. Feature No. 1, Site No. 22.



a. Burial No. 13, Site No. 22.



b. Burials No. 14 and No. 15, Site No. 22.

Burial No. 14.—Some 15 inches above the ground floor an adult burial, poorly preserved and partially disturbed, was found. The head was to the north, but some of the bones were not in anatomical order. A rock had been placed over the leg bones.

Burial No. 15.—This burial, by which it was found, was very similar to Burial No. 14. Both burials appear to have been bundle burials of bones. Both are shown in plate 127, *b*.

Burial No. 16.—On the original ground floor the skull of an adult was found covered by a rock. The rock, which was 7 inches long and 6 inches wide, had crushed the skull. To the south, a larger limestone rock covered a perforated shell bead.

Burial No. 17.—Under the pile of stone on the mound floor, described above, the fully extended skeleton of an adult was found. The body had been placed on the back with the head to the north and lay under the center of the pile of stones. A broken stone pipe of Iroquoian design was found at the right shoulder and a flint point was found under the right forearm. The artifacts from this burial are shown in the lower row of plate 122, *b*.

Inasmuch as Burial No. 17 was the oldest skeleton in the mound—that is, the one first deposited as the mound was built, and at the same time was the best-preserved skeleton in the mound—the question naturally arises as to why burials which were made later were not in such good condition. It is believed that, with the exception of Burial No. 17, and possibly Burial No. 1, all burials found here were deposits of skeletal remains which had been previously exposed as scaffold burials. If such be admitted, the lack of anatomical order and separate deposit of skulls is easily understood. Further, such scaffold burials may, in some cases, have resulted in the "bundle burials" which were found in this mound. The nearly complete disappearance of skeletal material in some of these burials may be the result of scaffold burials. The exposure of the bones for a period of time would have left them in a condition for rapid deterioration after they were placed in the mound.

CONCLUSIONS

From the evidence presented by the very small number of artifacts, and from the method of burial, it would appear that Site No. 22 is more closely related to Site No. 21 than to any other explored in this survey.

SITE NO. 23.—DOAN CAVE

This cave was about 10 miles southwest of Clinton, on the Doan property. The entrance was near the top of a high hill and was very large, approximately 75 feet broad by 75 feet high at its outer extremeties. There was a descent of about 35 feet from the front to the first floor and a distance of about 100 feet from the front to the back wall. A passage led off to the right and another to the left, both being rather precipitous, due to the many tons of talus which had accumulated at the entrance. This latter condition thwarted any possibility of excavation, except for an area 25 feet by 8 feet along the back wall.

Former habitation was evidenced by the presence of a few dozen small potsherds which appeared to be similar to those recovered from previously investigated caves of the area. A fragment of human parietal was also found.

RECTANGULAR STRUCTURES

One of the outstanding features revealed by the archaeological survey of the Norris Basin was the rather general use of rectangular house structures of various sizes. Of these structures, those of smaller size were designed for use as dwellings. The larger structures probably served as public buildings or town houses. The presence of such structures was generally revealed by post-mold patterns in the structure floor. In a few cases the remnants of posts were found still in situ. On 18 sites there have been uncovered 54 post-mold patterns, every one of which indicated a rectangular structure, generally with rounded corners.

Dwelling Houses

Of the 54 structure patterns found, less than half were thought to be dwelling-house sites. This conclusion was reached because of their smaller size and because of their irregular placement on the village sites. In general, these dwelling houses rarely exceeded 20 feet in greatest dimension. Their post-mold pattern indicated the use of small posts in the walls, generally not exceeding 4 inches in diameter. Such structures were erected above a prepared floor which was usually well made and easily distinguished from the humus-filled soil about it. Such floors and post-mold patterns lay in the hardpan just under the humus layer and were usually not more than 10 inches below the surface. It is hardly possible that such buildings could have had any earth on their roofs, since their presence is not marked by any recognized mound. They probably were constructed of cane and grass thatch on a system of poles or posts set in the earth. Occasional post molds in the interior of the post-mold pattern may indicate the presence of furniture in the dwelling, or possibly such molds may have been made by roof and wall supports. It appeared that such dwellings had only one door, and that was usually located in the corner of the structure.

The only furniture remaining on the dwelling-house floor was a simple fire basin, or a burned area, usually near the center of the structure. It is supposed that there were many more dwelling houses than town houses on any site and one may wonder why, relatively, so few dwelling-house sites were found. Since they were not necessarily associated with any mounds, and were widely scattered, there was nothing to mark their presence on a village site. For that reason such dwelling house post-mold patterns were to be found only as a result of trenching on a village site. Thus, since they were somewhat widely scattered and left nothing conspicuous to mark their location, the number reported from any site is probably small as compared with the number which existed in that area.

Town-House Sites

Of the larger post-mold patterns, some 30 were regarded as "town-house" sites. This designation was assigned because of their larger size and because of their rather central location in the village sites. Further, each of these "town-house" sites was marked by the presence of an earth mound varying in height from 1 foot to 10 feet. This is taken to mean that the "town houses", at the time of their construction, were covered with cane and grass and had a layer of earth on their roofs. At the collapse of the structure the earth formed a low mound, upon which another town house was often erected. The larger mounds were thus formed by the building of successive structures on a single site. From the meager evidence still remaining, these town houses seemed to fall into two general classes. For convenience, and merely to distinguish the two classes, they may be called the "large-log" and the "small-log" type. In many ways they are similar, but, as their names imply, they are to be distinguished by the size of log used in their construction. As will appear, this variation in the size of the logs used altered the type of construction and indirectly produced other distinguishing characteristics.

The rectangular town house of the "small log" type was made of logs not larger than 5 inches in diameter and usually as small as 3.5 inches at the base. They were set in the wall at a distance apart of from one to one and one-half times their diameter. Thus the space between the logs varied from about 4 to 8 inches. The method of construction of the "small log" type of town house has been described under Sites Nos. 2 and 5. (See pp. 10 and 38.) Structures on Sites No. 2, No. 5, No. 6, No. 8, and No. 9 are of this type.

The "large log" type of town house was constructed of logs from 10 to 14 inches in diameter. These logs were 2.5 to 4 feet apart. The method of construction of this type of town house, which is to be considered later, had to be varied to meet the conditions imposed by the use of large logs. In what follows immediately the "small log" town house is described.

In most cases a definite floor, prepared of clay which had been smoothed and pressed while soft, existed within the post-mold pattern. When this floor dried it became checked and cracked. In places it was polished by the passing of many feet. In some cases evidence of a split-cane covering for the floor was manifested by impressions remaining deeply stamped in the clay.

In many cases no evidence existed as to the manner of the destruction of these buildings, and it is natural to assume that in time these wooden structures decayed and collapsed, leaving the post molds deep in the floor below the frost line and below the reach of the plows of the early settlers. In such cases the decay was so complete that no vestige of the original building remained except the post-mold pattern.

However, there is definite evidence that occasionally these larger buildings or town houses were destroyed by fire. In many such cases structures so burned had other structures erected over them at a higher level. It is believed that the burning of these structures was intentional. In the large number of town-house structures investigated not a single object of any kind which would indicate a hasty removal, either of occupants or the contents of the building, was found on the floor covered by the burned structure. If these buildings were burned intentionally, deliberately, and not accidentally, one naturally seeks a reason for their burning. It does not seem necessary to assume any special motive for such destruction beyond the desire to erect a new town house on the site of the old one. From the evidence presented herein it seems certain that these structures were made of logs, each with the larger end set in the earth and the smaller end bent inward to form a portion of the roof, as described on page 21. The roof was covered with split cane and thatched with grass and had considerable earth deposited over the thatching. From this method of construction it is believed that the weight of the covering of earth on the roof and the pressure of the earth piled against the walls caused the walls of the structures to lean and the roof to sag badly as time passed, thus necessitating numerous attempts at minor repairs. These repairs are shown by the building of portions of secondary walls inside the original walls, apparently for the purpose of strengthening the structure, and also by the use of various props and roof supports, each of which left post-mold patterns in the structure floor and seemed generally to have been later additions to the building.

Even with such repairs, the time eventually came when the building, because of decay, became unsuited for further use and a new structure was necessary. It is natural to suppose that in most cases the old town house was on the most desirable site for such a building and probably on ground consecrated[1] for that purpose. In order to have a new structure, the old one must either be removed or a new site chosen and prepared. If the old site was to be used the old structure had to be removed to make way for the new. From the manner of its construction its mechanical removal would have been difficult and the material of which it was composed would have had no salvage value. The burning of such a structure was an easy and effective way to clear the site for the new building. With the collapse of the old structure, the earth about it and on its roof actually raised the level of the site several feet; a result very desirable in itself. Thus two advantages could be obtained by the simple expedient of applying fire to the interior wooden content. It is believed that there is abundant evidence to show that this was the actual manner in which these mounds were constructed. Each new building had its roof covered with earth, which, when the building was destroyed, added its increment to the height of the mound.

The conclusion that these buildings had a heavy covering of earth over the thatching is based on evidence enumerated as follows:

1. The incomplete combustion of all carbonaceous material composing the building clearly indicates a burning in an atmosphere of reduced oxygen content, such as is produced intentionally in a charcoal kiln, and such as would have been produced had these structures been well covered with earth on both roof and walls. Grass and small cane were reduced to charcoal along with large logs, and all still retain their exact form, even to the preservation of the strings and ropes used in roof construction.

2. As was pointed out in the discussion of Site No. 9, earth which had been heavily burned was found on the floor *under* the fallen structure. The earth above it showed the effect of fire much less. The structure, when it fell, did not reach the floor of the building but was held up by *burned* earth which had *previously* fallen; evidently from the roof of the structure. This condition clearly indicates that earth was on the roof of the structure before the burning started.

3. So important is this concept of earth-covered structures to the proper interpretation of the findings in the Norris Basin that one naturally seeks from early historic records confirmation of this prac-

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[1] See footnote 28, p. 214.

tice, if such may be found. Fortunately there are a number of recorded observations which throw light on the point. Timberlake[2] says that he saw earth-covered town houses in 1762 while he was a hostage to the Over Hill Cherokee on Little Tennessee River. It will be noted that he not only describes town-house structures which are covered with earth, but he particularly describes the small and inadequate door and states that the only other opening in this structure was the smoke hole in the roof. The absence of openings, other than one small door and a small vent for smoke, would produce exactly the condition referred to above, as necessary to cause the incomplete combustion observed. This method of construction of town houses with only a single door and no windows or openings except the smoke hole seems to have been a fairly general practice among the Cherokees in early historic times.

Timberlake's description seems to be confirmed by a much earlier and quite a remarkable historic event, referred to by Williams[3] and reported by Grant,[4] relative to the action of Sir Alexander Cuming, an agent of His Majesty King George, who on the night of March 23, 1729, went into a Cherokee town house at Keeowee where there were above 300 Indians assembled and caused them to acknowledge the sovereignty of King George. The significance of this event in this connection as Grant reports it, is that it would have been impossible had there been more than one door or even windows or other apertures providing an exit from the building. This would seem to confirm the fact that the Cherokee town house at Keeowee in 1729 had only one door and no other major opening.

Another point should be emphasized. Many early travelers among the southern tribes—Cherokees, Creeks, Choctaws, and others—report that the town houses seen by them were erected on mounds, and the statement is usually added that "the mounds were built for that purpose." As is well known, many of these tribes where such mounds are reported covered their town houses with earth. The opinion is here ventured that many if not all of these mounds which, as reported, had been built for the purpose of forming a site for a town house were actually built by collapse of former town houses on the same site. The multiple occupancy of a single town-house site was perhaps common to most southern groups and this multiple occupancy of a single site by earth-covered town houses is not only the reason for the erection of the mounds but an explanation of the method of its construction.

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[2] See footnote 24, p. 212.

[3] See footnote 20, p. 209.

[4] See footnote 21, p. 209.

The Interior of the Town House

On the floor of a number of these "small-log" town houses, under the burned structures, there have been found quite similar and rather permanent forms of furniture, constructed of baked clay, which seem to be characteristic of this type of town house. They have been called "seats" and "altars" for lack of better terms, but with no attempt to assert any positive knowledge as to their purpose. They definitely suggest a very similar use for these houses on Sites Nos. 2, 5, 6, 8, 9, and possibly others. The manner of construction of these clay objects and their general uniformity in dimension and placement within the town house would appear to indicate that very similar ceremonies were conducted on these seemingly related sites. Clay seats to the number of six, from five different sites, have been found. Each seat was built with its back against the structure wall, generally near the center of the wall, and it appears to have been designed for use by the "presiding officer." While slight variations in size and minor variations in form of these seats occur, the outstanding fact that each is made of two broad flat steps, the top one not so thick as the lower, seems significant. It is believed that they were designed to be used by the chief or presiding officer, sitting cross-legged on the top shelf with feet resting on the second shelf. The whole intent seems to have been to raise this person, when seated, several feet above the level of any others who might sit in similar fashion on the cane matting spread in a strip on the floor against the remaining walls of the structure. In several cases split-cane impressions have been found in strips about 5 feet wide, against the walls inside and completely encircling the building; starting at one side of the "chief's seat" and ending on the other side. The center of the floor, a rectangle about the "altar", does not show such impressions, but presents a definitely smooth, hard surface.

For purposes of comparison, photographs of these seats are shown together in plates 128–131, inclusive. In general appearance they are quite similar. All definitely show the top step less in height than the lower step. The lower steps may vary in height and in form, but the top steps are fairly uniform in all dimensions, especially in height.

The method of construction seems to have been to build up clay to the approximate form desired, and, by kneading and pounding while soft, to make it very compact. The clay selected for these seats was always of a pure variety—red, yellow, or white—but containing no humus or midden material. The body of the construction was quite hard and uniform. Over this hard and well-formed structure a layer of clay from 0.5 to 0.75 inch in thickness was plastered while it was quite plastic. This coating was troweled to a smooth surface and firmly attached to the main body of the seat. It was harder than the interior and had a surface which took on a high polish as a result of use. So hard was this surface that it may have been subjected to fire hardening in some cases. However, there was no tempering material in the matrix, and in cases where fire discolorations were observed, the seat had been under a burned structure which had collapsed upon it. It is possible that no agency for hardening the surface was used except kneading of the clay while soft, and continued drying. If in this drying any cracks developed they were filled; for none were found in the surface when the seats were first exposed. When they were uncovered, however, they absorbed moisture readily. Most of this work of exploration was done in midwinter, so that soon after exposure these seats would be exposed to rain, snow, and often to freezing temperature. After two or three wettings the surface would check and deep cracks would appear in the body of the material. After freezing, crumbling soon began. Always the surface would flake off, which seems definitely to suggest that it had been plastered on to the main body and was not thoroughly attached. The interior portions of the clay body did not scale off in the same way.

In plate 128, *a*, is shown the seat in the primary floor of Bowman Mound No. 1, Site No. 2. The top step of this seat was slightly damaged by workmen before its presence was discovered. A portion of the top step has been restored. This seat had really three steps. The lower one shown in the photograph was a clay platform some 3 inches thick which extended to both front and rear of the seat, as shown in figure 4. Plate 128, *b*, is the seat on Mound No. 2, Site No. 6, Harvey Hill farm. The seat on the primary floor of Structure No. 2 on the Caryville Site No. 5, shown in plate 129, *a*, is exceptional in that the lower step has a semicircular outline instead of a rectangular form, which is the usual method of construction. It was built so closely against the wall of the town house that the logs came up through the back of the seat, as shown in plate 129, *b*, which presents the longitudinal section of these post molds. The seat on the secondary floor of Mound No. 2 on the Harris farm, Site No. 9, which is shown in plate 130, *a*, is notable in that the surfaces of both steps are slightly concave.

Plate 130, *b*, shows a seat being uncovered. The hard surface of the seat separates readily from the superincumbent earth. There is, therefore, little danger that the surface of the seat will be marred during excavation, unless it be because of carelessness of unskilled and untrained workmen. Plate 131, *a*, shows the seat on the primary floor of Mound No. 2 of the Harris farm, Site No. 9. This picture was taken after the seat had been subjected to several rains and freezing at night. The surface was flaking off and large cracks were developing in the main body. The large post mold at the left-hand corner of this seat was much larger in diameter than any others in the structure and from its position could hardly have been used as a wall or roof support, since it was so close to the structure wall. It is believed that it was an adjunct to the seat. This larger post set in the mold may have served many useful purposes in connection with the ceremonies conducted within this structure.

Plate 131, *b*, shows an end view of this same seat and presents the two systems of post molds, from the primary and secondary structures, almost parallel and coincident at this point. The seat was constructed *against* the posts of the primary structure, as shown by the line of post molds immediately in its rear.

"ALTARS"

Interior structures of a second type, used in connection with fire, and found on the floor of the "small-log" type of town house, have been called "altars", for lack of a better term. It is not intended by this term to suggest that their purpose is fully known but that they were specialized fireplaces, much more elaborately constructed than the ordinary fire pits or basins. Further, the fact that certain characteristics seem common to a number of them would argue that they were made for a common purpose. That this purpose was more than merely providing a place either for cooking or a source of warmth can hardly be doubted. Their form and placement would suggest some ceremonial connection with the general purpose of the structure with which they are associated. It would hardly convey the correct impression to call them fireplaces or fire basins.

They may be generally described as clay platforms, raised from 2 to 6 inches above the town-house floor. These clay platforms were nearly square in shape with vertical edges slightly sloping and corners slightly rounded. They were placed nearly symmetrically at the center of the structure floor, and were almost exactly oriented along the cardinal directions. They were made of pure-grade clay and in some cases of a color and texture seemingly foreign to the immediate vicinity of the building. They were carefully made, troweled to form, with smooth surfaces. Where basins in them were circular, in every case these basins in any particular altar were exactly the same size and accurately constructed in exact similarity.

Three of these altars definitely showed battering by heavy blunt instruments, in what appears to have been an intentional attempt at destruction, before they were covered over by the falling of the structure over them.

For purposes of comparison there are shown in plates 132–135, inclusive, five of these square altars, together with two ordinary fire basins. These altars are from five town-house structures from four sites—Nos. 2, 6, 9, and 17. Plate 132, *a*, shows the square altar on the primary floor of Mound No. 1, Site No. 2, Bowman farm. Four 9-inch circular basins were located in a clay platform raised 6 inches above the floor. In plate 133, *a*, is shown what was probably the most elaborate altar found in this survey. It was about 6 feet square and had four circular basins, each 19 inches in diameter, located one in each corner. This altar was on the secondary floor of Mound No. 2, Site No. 9, Harris farm. It shows seemingly intentional partial destruction by its former users. Plate 133, *b*, is this same altar, but shows the fire pit cleared of ashes. It was about 12 inches deep and elliptical in form. Plate 132, *b*, shows the altar on the primary floor of this same mound—No. 2, Site No. 9. It, too, is square, 44 inches on the side and 2 inches higher than the floor level. It had only one basin, a circle 23 inches in diameter and 4 inches deep. Plate 134, *a*, shows the altar in Mound No. 2 of the Harvey Hill site, No. 8. It is here seen protruding from under the remains of the fallen structure. This altar was 2 inches higher than the floor and was 40 by 52 inches. It had only one basin, a circular one 18 inches in diameter and 5 inches deep. When found, the basin was filled with white ashes. The remainder of the surface was level and smooth. A portion of one quadrant of this altar had been hammered into small fragments before the building was burned and fell upon it.

In plate 134, *b*, is shown, for comparison, the altar on the primary floor of Mound No. 1, Site No. 17. This altar, made of white clay foreign to the immediate vicinity, is particularly described under Site No. 17. It consisted of a square clay platform raised above a very definite floor of dark-red clay. The basin in this altar was a modified square with sharp-pointed corners and concave sides. It, too, had been intentionally battered by its prehistoric users. While it rested on a well-made floor, the structure pattern with which it was associated, if there had, indeed, been a structure, was not found. It cannot, therefore, with confidence be ascribed to either a "small-log" or "large-log" town-house site. However, both types of construction were found elsewhere on this site. In "large-log" town houses found on this site circular fire basins were used, as shown in plate 135, *b*.

Fire basins similar to that shown in plate 135, *a*, were used in dwelling houses on Site No. 17. Since no positive proof was obtained of a structure over the floor on which this square altar rested, although such evidence was carefully sought, it may be reasonable to assume that the floor was a yard or open arbor with little or no roof material over it. From the conformation of this altar it seems to have been constructed for the purpose of holding four logs at right angles to each other, end to end, so that they could be burned without rolling out of position.

THE "LARGE-LOG" TOWN HOUSE

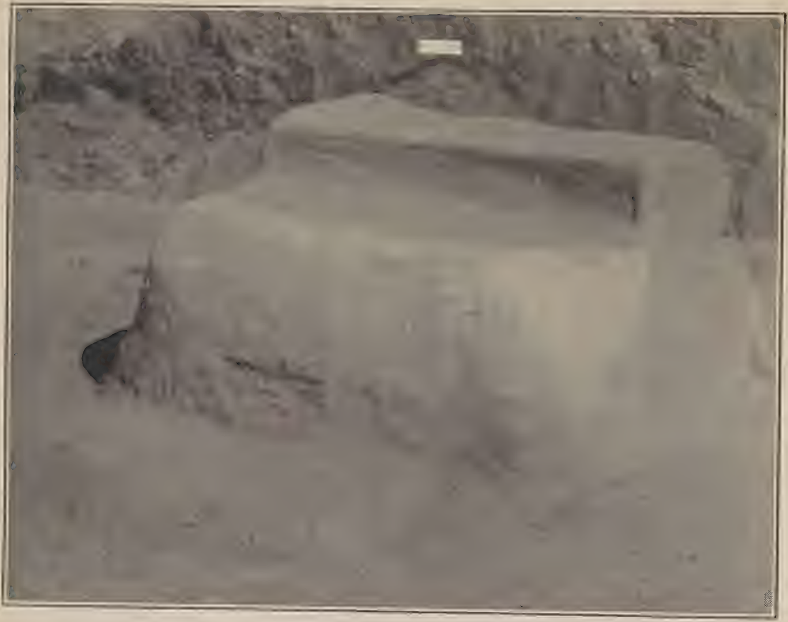
This type of structure is well illustrated by Structure No. 7, Mound No. 1, Site No. 10, and by the structure in the mound on Site No. 19. As the name implies, large logs were used. These left post molds of from 8 to 14 inches in diameter. They were not set in trenches; at least no trench has been observed on any such site. They seem to have been set in holes dug to receive the base end of the posts and, in at least one case, a flat rock was placed in the bottom of the hole, upon which the post rested. This fact seems significant, as will appear later. In some cases these "large-log" post molds clearly indicate that the post leaned inward. (Pl. 52.) The molds are often found to have a vertical length of 4 feet. It appears that there is no reason to doubt that these structures were covered over with earth and had earth piled against their sides, somewhat after the manner of the "small-log" town house, and yet in no case has there been found any burned and fallen structure of the "large-log" type.

This appears to be most significant, in the light of the fact that on sites of the "large-log", as well as sites of the "small-log" town house there was multiple construction of such buildings. The question naturally arises why there were no burned structures of the "large-log" type, but abundant evidences of their existence in the post-mold patterns. It is believed that a reasonable answer to this problem is possible in the light of the information obtained by these excavations.

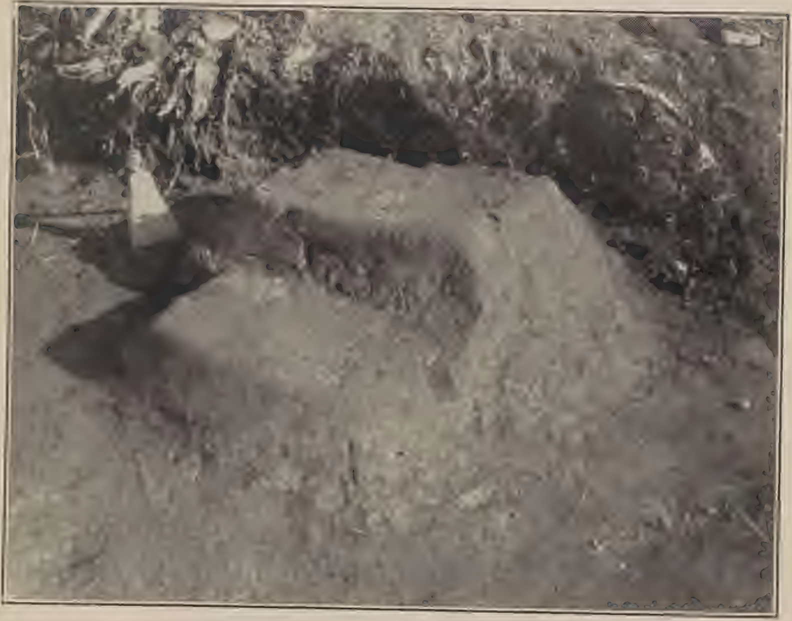
When logs were as large as 8 to 14 inches it would have been impossible to bend their tops inward and lash together two such logs from opposite sides of a building to form a roof support. This necessitated some other type of roof construction, and if it had to support a covering of earth on the roof, demanded a heavy and substantial structure. It is believed that this was accomplished by using as vertical posts logs 8 to 14 inches in diameter. While it cannot be proven, it is suggested that each of these vertical posts may have had, at the upper end, a fork or lateral limb which would support a large horizontal log. By such means heavy beams laid horizontally and supported at each end by heavy vertical posts constituted a support for a layer of cane, grass, and earth which covered the building. Such a building could be made more substantial by leaning these vertical posts inward, and would certainly be able to support a heavy weight of earth for a longer period than the "small-log" type of construction. While in use, this type of building would probably require less repair and in general would have a longer period of utility. However, if it finally became obsolete and a new structure had to be erected on the same site, it could not easily be destroyed by fire. The logs would be too far apart and too large to be reduced to charcoal by such incomplete combustion as could take place within it. When it had to be removed its mechanical destruction was the only possible manner of clearing the site. In some of the earlier and smaller structures on Site No. 10 it appears that the site was cleared by the entire removal of the old structure. In the larger structures this could have been accomplished by using poles as levers to disengage the ends of the horizontal logs from the vertical forks and by allowing these horizontal logs with all their weight of earth to fall on the town-house floor. Being unburned, they soon decayed and in some cases would leave horizontal molds of large-sized logs over the floor of the town-house structure, as found on Sites Nos. 10 and 19 and shown in plate 49, *a*, and plate 96, *b*. Such vertical posts as were left standing by this method of destruction could either be burned off above the ground or "wiggled" loose by pushing them laterally backward and forward and lifting them out; or they could, if desired, be built into the wall of the new structure to be erected on the site, as was done in Site No. 19 (pl. 108).

Of course, one cannot be sure that these were the exact steps in the destruction and removal of such a "large-log" town house, but some such method would have been sufficient to have removed it. Whatever the method used, the facts remain that (1) the old structures were removed and new ones were built on the same site; (2) they were not burned; (3) vertical logs of lower structures have been found incorporated in later structures; and (4) horizontal large log molds have been found in the floor of "large-log" town houses.

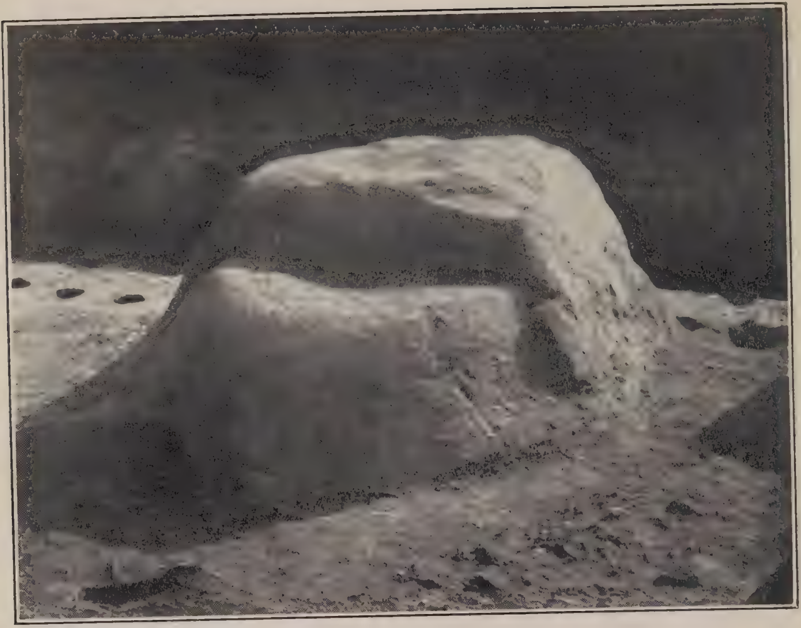
These facts necessitate some such explanation. The discovery of rock under the ends of post remnants raises a question of the reason for their presence. In many cases these stones were smaller than the ends of the posts. They could hardly have been there for any service in preventing the log from settling too deep. Why were they put in the hole made to receive the post? Why not more earth? Could it be that in attempting to bring all of the horizontal beams of a building under construction to the same level they wanted to raise certain posts just a few inches higher after the forked ends of the posts had been engaged with the roof beams? If this need ever arose, and it would seem certain that it would arise in this method of construction, what would have been easier or more efficient than to have selected a stone of the *right thickness* and *smaller* than the post, if necessary, and have it slipped under the base of the post, as shown in plate 109, *a?* Having seen seven such posts thus supported in one structure, the opinion is expressed that this stone was used to "level up" the horizontal logs of the roof preparatory to receiving the covering earth.



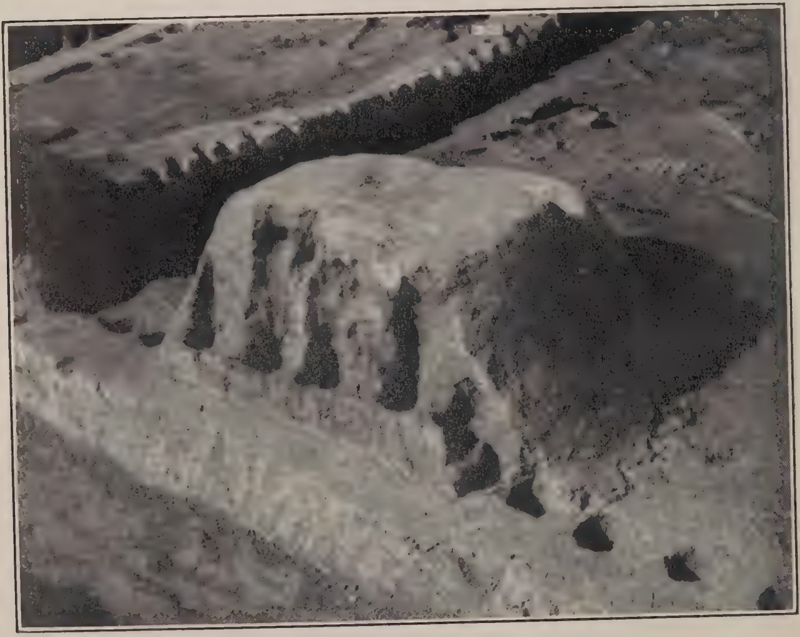
a Seat on primary floor. Mound No. 1, Site No. 2.



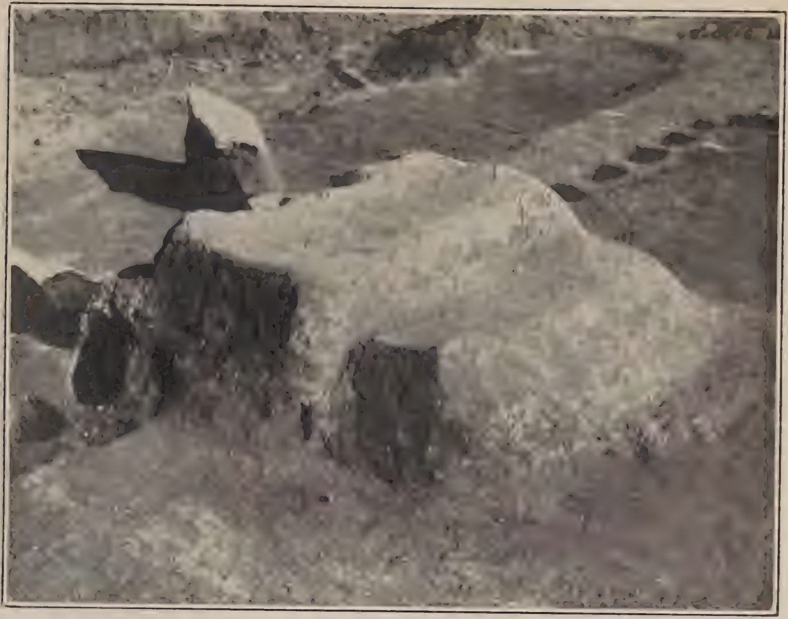
b Seat on primary floor. Mound No. 2, Site No. 6.



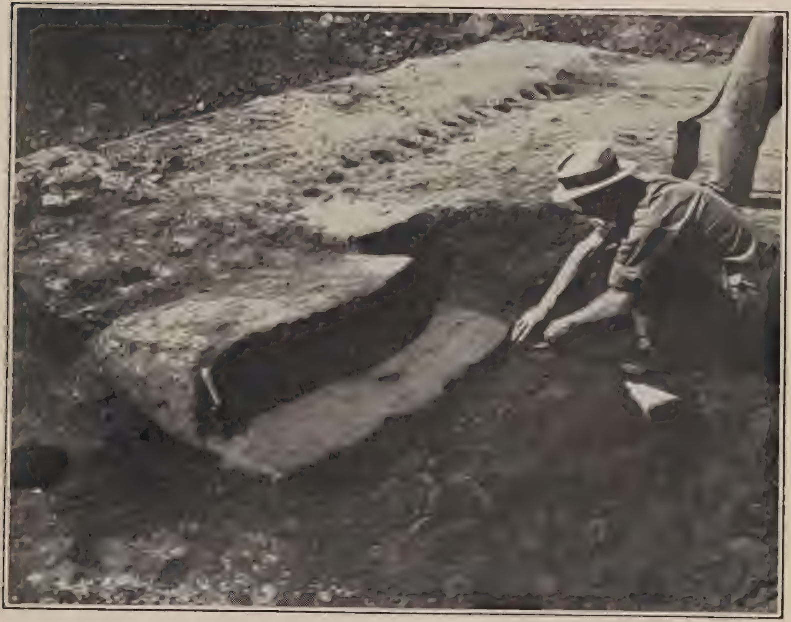
a. Seat on primary floor, front view. Structure No. 2, Site No. 5.



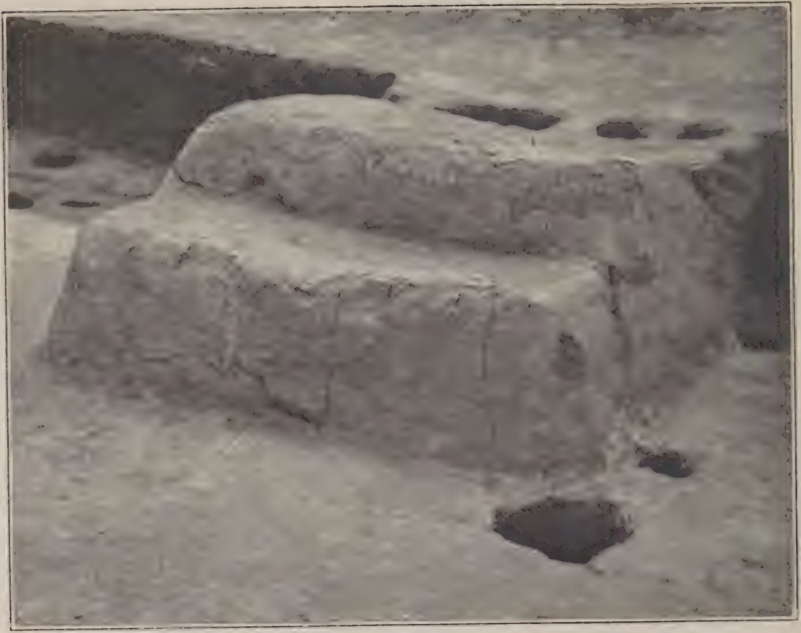
b. Seat on primary floor, rear view. Structure No. 2, Site No. 5.



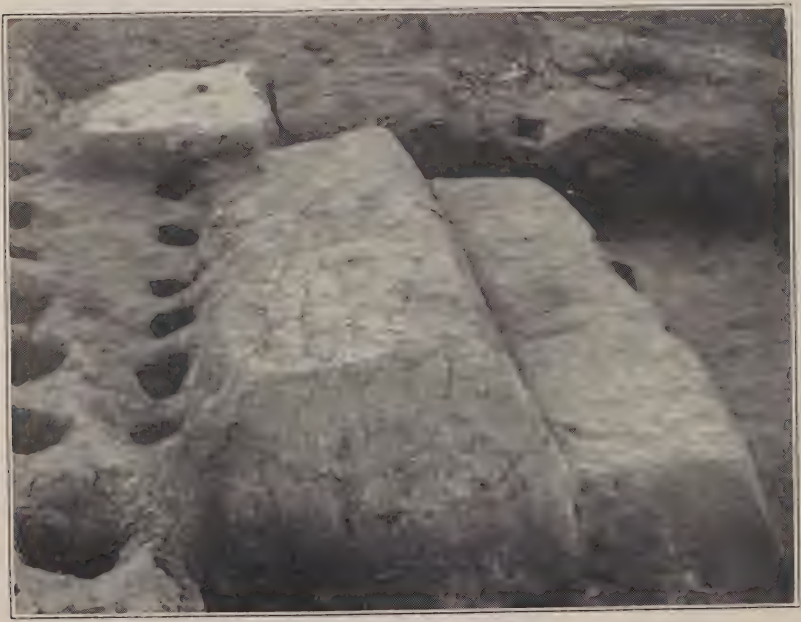
a Seat on secondary floor. Mound No. 2, Site No. [illegible]



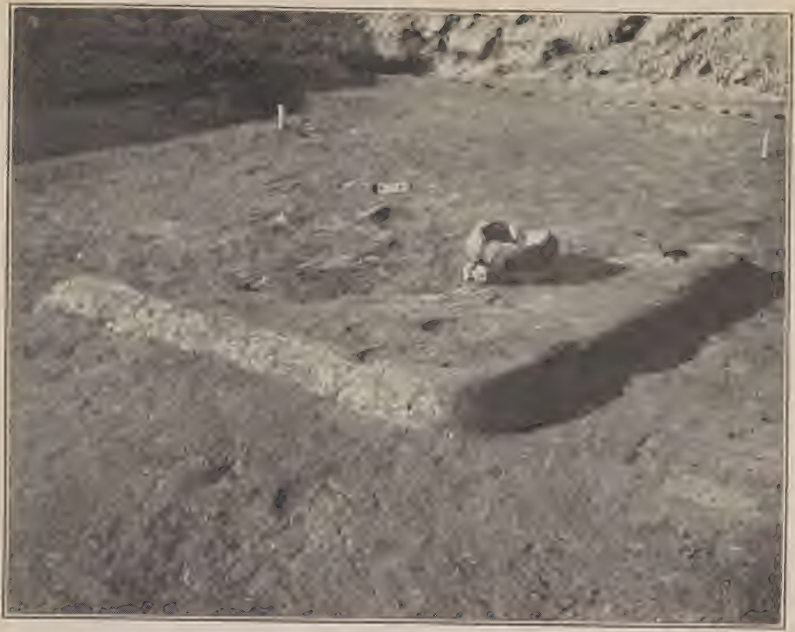
b Seat on primary floor being uncovered. Mound No. 2, Site No. 9.



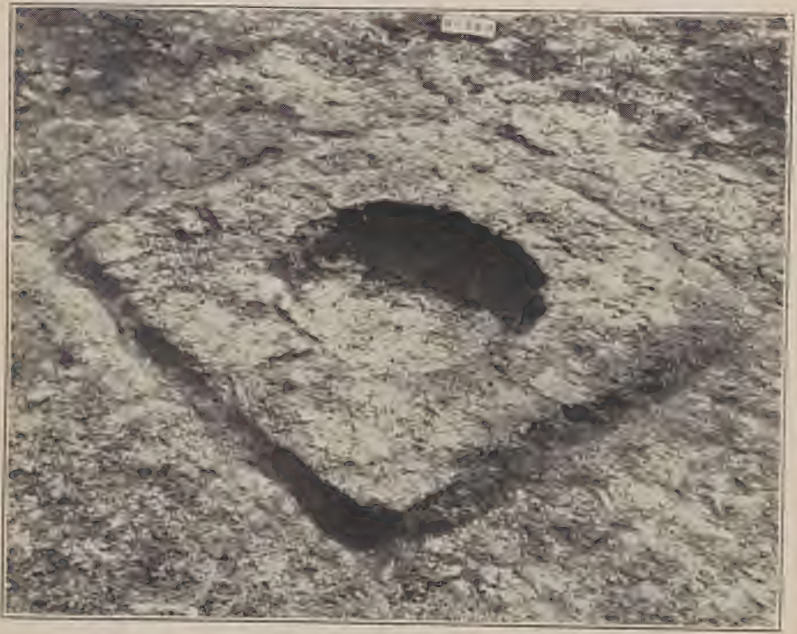
a. Seat on primary floor, front view. (Note large post mold in front at corner.) Mound No. 2, Site No. 9.



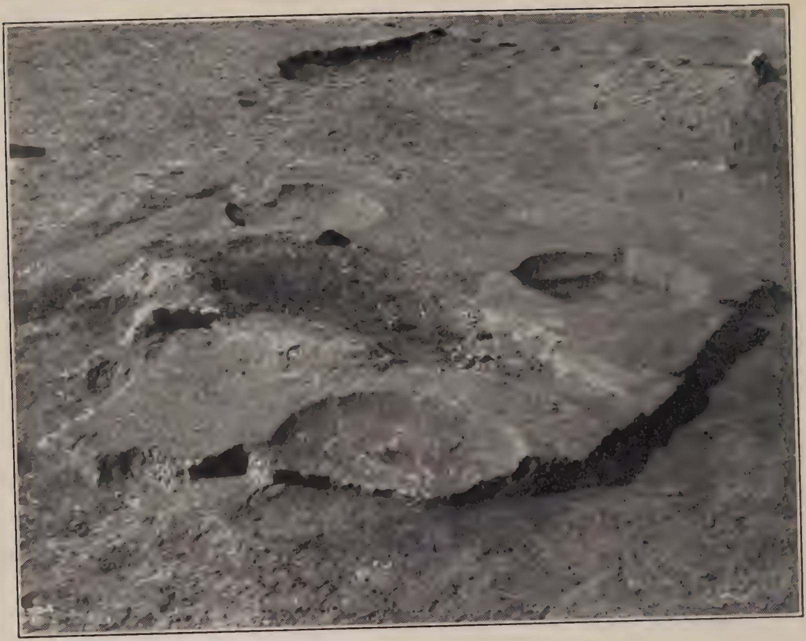
b. Side view of seat on primary floor, showing construction against primary wall. Mound No. 2, Site No. 9.



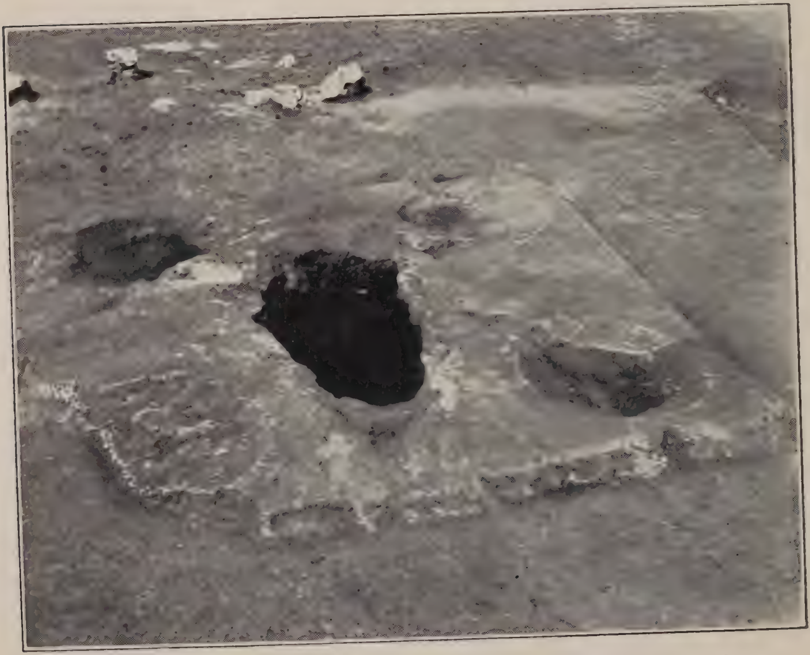
a. "Altar" on primary floor. Mound No. 1, Site No. 2.



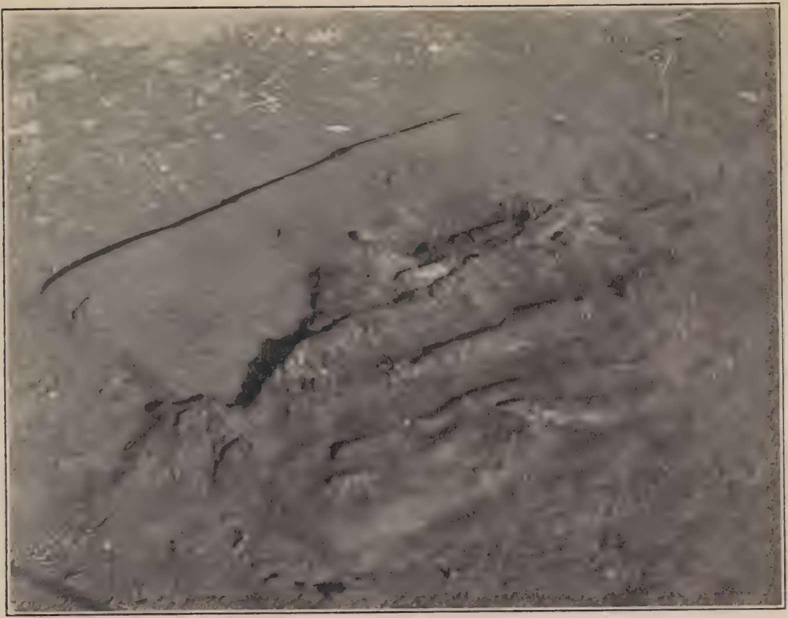
b. "Altar" on primary floor. Mound No. 2, Site No. 9.



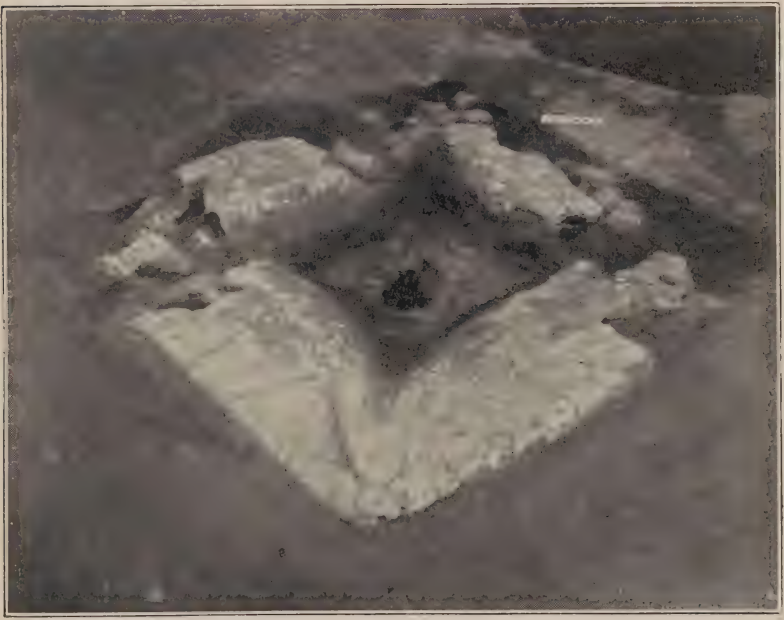
a. "Altar" on secondary floor. Mound No. 2, Site No. 9.



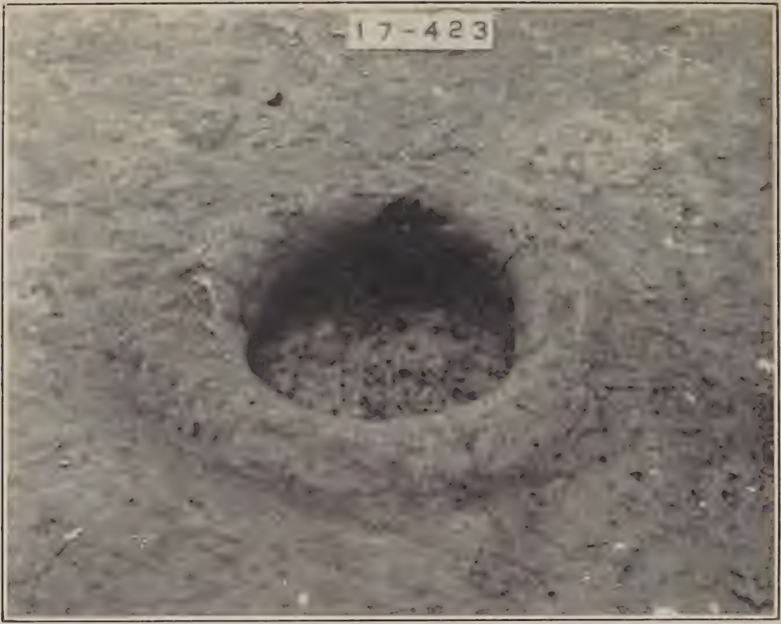
b. "Altar" with fire pit cleared of ashes, secondary floor. Mound No. 2, Site No. 9.



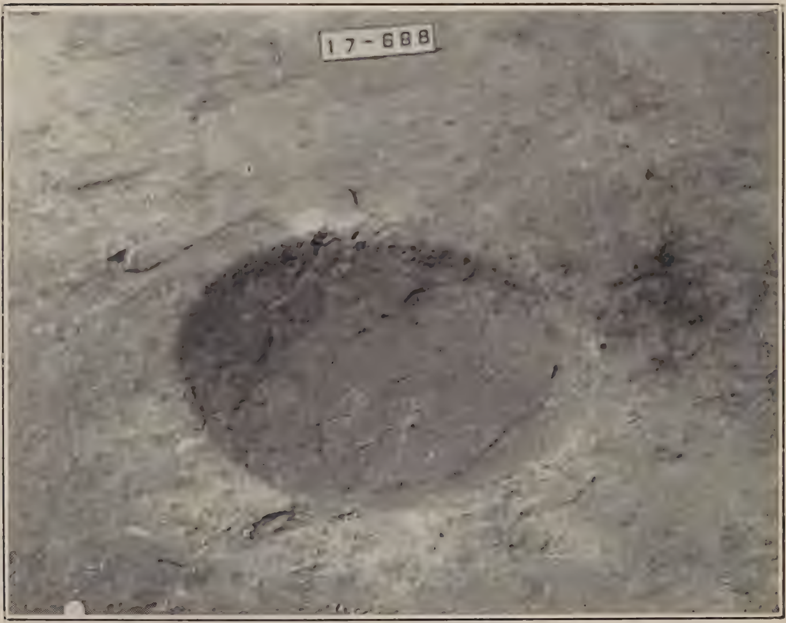
a. "Altar" partially covered by wall of burned structure on floor. Mound No. 2, Site No. 6.



b. "Altar," primary floor. Mound No. 1, Site No. 17.



a. Fire basin in dwelling house. Feature No. 6, Site No. 17.



b. Fire basin. Feature No. 17, Mound No. 3, Site No. 17.

While these "large-log" town houses were "raised with logs" and "covered with earth", as described by Timberlake, and were to that extent quite similar to the "small-log" town house, yet in many particulars they were quite dissimilar. Of these outstanding dissimilar characteristics so far observed, the following may be listed:

1. Large-log structures were never burned, but old structures were removed or destroyed.
2. No clay seats or clay "altars" have been found on the floor of "large-log" structures.
3. The posts of the "large-log" structures were not set in trenches as were the posts of the "small-log" structures.
4. "Large-log" post molds are two or more times as long as "small-log" post molds and much farther apart.
5. "Large-log" structures usually had a concave fire basin in the center of the floor. These basins usually were full of ashes. In form they differed little from fire basins found on village sites and in dwellings.
6. Pit burials below the floor and intrusive burials into the mounds formed by the collapse of the "large-log" structures have been found in two sites, whereas no adult burials have ever been found in mounds above "small-log" town-house sites.
7. Of the burials found in association with "large-log" structures, some are clearly burials of bodies in sitting posture in pits.

EARLY HISTORY OF THE NORRIS BASIN

Some of the findings of the archaeological survey of the Norris Basin, aside from the study of dendrochronology, suggest that the occupancy of some of the sites described in this report may have extended down nearly to, if not, indeed, quite to, the time of the contact with the early white travelers. These travelers came from the east over the Allegheny Mountains and visited the Cherokee, the Creeks, and other southern tribes, making records of their observations. It is for this reason interesting as well as necessary to a proper interpretation of these archaeological findings to study the early written history of this region and to glean from it every fact and suggestion which may throw light upon the late prehistoric period. While for the purpose of this survey interest centers in the relatively small area drained by the Clinch and Powell Rivers, yet to fully understand its early history it is often necessary to go far afield and to consider events which transpired far from the area in question.

Mooney's[5] map, published in 1900 under the designation of "The Cherokee and their Neighbors, showing the territory *held* by them at various times east of the Mississippi River", presents the Cherokee area as including the northeast corner of Alabama, northern Georgia, the western portion of South Carolina, North Carolina, and Virginia, and a small part of the extreme southern part of West Virginia. From the corner of Kentucky, Virginia, and West Virginia, the northwestern boundary of this area follows the direction of the Kentucky-Virginia boundary line and crosses the State of Tennessee to a point on the northern boundary of Alabama midway from east to west. This area included the valleys of the Powell and Clinch Rivers for their entire lengths. The evidence for this boundary as the land "*held*" by the Cherokee came from many sources—ethnological, archaeological, historical, and traditional. The map as thus drawn is an attempt by Mooney to combine all available information as to the area occupied or claimed by the Cherokee in prehistoric times.

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[5] Mooney, 1900, pls. 11 and 111.

After the beginning of the colonial period in America the pressure of the white population, at first on the Atlantic seaboard and later along the Gulf coast, began a long period of unsettlement for the native populations. Before white settlement there had been little need for the assertion of fixed boundaries for the Indian populations. With the rising pressure of population and the consequent shifting of many Indian tribes in all directions, the matter of boundaries became very important, and many Indian nations laid claim to vast domains as "hunting grounds", even though such areas had never in any sense been occupied by them. Mooney thus describes the situation of the Cherokee:

> The Cherokee were the mountaineers of the South, holding the entire Allegheny region from the interlocking head-streams of the Kanawha and the Tennessee southward almost to the site of Atlanta, and from the Blue ridge on the east to the Cumberland range on the west, a territory comprising an area of about 40,000 square miles, now included in the states of Virginia, Tennessee, North Carolina, South Carolina, Georgia, and Alabama. Their principal towns were upon the headwaters of the Savannah, Hiwassee, and Tuckasegee, and along the whole length of the Little Tennessee to its junction with the main stream. Itsâtĭ, or Echota, on the south bank of the Little Tennessee, a few miles above the mouth of Tellico river, in Tennessee, was commonly considered the capital of the Nation. As the advancing whites pressed upon them from the east and northeast, the more exposed towns were destroyed or abandoned and new settlements were formed lower down the Tennessee and on the upper branches of the Chattahoochee and the Coosa.
>
> As is always the case with tribal geography, there were no fixed boundaries, and on every side the Cherokee frontiers were contested by rival claimants. In Virginia, there is reason to believe, the tribe was held in check in early days by the Powhatan and the Monacan. On the east and southeast the Tuscarora and Catawba were their inveterate enemies, with hardly even a momentary truce within the historic period; and evidence goes to show that the Sara or Cheraw were fully as hostile. On the south there was hereditary war with the Creeks, who claimed nearly the whole of upper Georgia as theirs by original possession,

> but who were being gradually pressed down toward the Gulf until, through the mediation of the United States, a treaty was finally made fixing the boundary between the two tribes along a line running due west from the mouth of Broad river on the Savannah. Toward the west the Chickasaw on the lower Tennessee and the Shawano on the Cumberland repeatedly turned back the tide of Cherokee invasion from the rich central valleys, while the powerful Iroquois in the far north set up an almost unchallenged claim of paramount lordship from the Ottawa river of Canada southward at least to the Kentucky river.
>
> On the other hand, by their defeat of the Creeks and expulsion of the Shawano the Cherokee made good the claim which they asserted to all the lands from upper Georgia to the Ohio river, including the rich hunting grounds of Kentucky. Holding as they did the great mountain barrier between the English settlements on the coast and the French or Spanish garrisons along the Mississippi and the Ohio, their geographic position, no less than their superior number, would have given them the balance of power in the South but for a looseness of tribal organization in striking contrast to the compactness of the Iroquois league, by which for more than a century the French power was held in check in the north. * * *[6]

Thus, by the time of their early contact with the American colonies, the Cherokee were claiming ownership of a tract of land much extended over the domain actually held and occupied by them. The area thus claimed extended from the west bank of the Kanawha River westward along the Ohio to the Tennessee River and included much of north Alabama and all of Kentucky and Tennessee east of the Tennessee River, and thus encompassed the valleys of the Clinch and Powell Rivers. During most of the eighteenth century the Cherokee were constantly at war with one or the other of their Indian neighbors, and often came into conflict with local armed forces of the white settlers. Whether victorious or defeated, each treaty of peace usually involved a cession of Cherokee territory, so that, as pointed out by Royce,[7] between the period 1721 and 1835, the Cherokee made 36 treaties and cessions of land. The last treaty, of December 29, 1835, included all lands held by the Cherokee east of the Mississippi River. This cession was in lieu of lands granted them west of the Mississippi River in what is now the State of Oklahoma.

It is to be expected, therefore, that this large and important Indian nation, having a traditional occupancy of the area under investigation, and for nearly two centuries asserting and defending a claim to territory encompassing the area in question, should have left some impress upon the archaeology of the region. For the purpose of this study interest attaches to the very earliest information concerning the habitat of the Cherokee.

The earliest tradition of the Cherokee as translated by Heckewelder[8] from the Walam Olum, the chronicle of the Lenape, identifies them with the Tallike or Talliquewi. Such tradition would seem to give color to Haywood's[9] record of Cherokee tradition obtained by study and association with living Cherokee in the early part of the nineteenth century. Haywood reported that the Cherokee have a tradition of having once lived north of the Ohio River and of having migrated up the Kanawha and the New Rivers to the headwaters of the Holston. Haywood believed that, according to this tradition, the Cherokee came into Tennessee from the northeast—from Virginia—and had established settlements on New River and on Holston River at Watauga Old Fields before they were forced to move farther south to the Little Tennessee River by the attacks of their northern neighbors. In this connection Haywood states:

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[6] Ibid., p. 14.

[7] Royce, 1887, p. 129.

[8] Heckewelder, 1819, pp. 47–49.

> * * * before the year 1690 the Cherokees, who were once settled on the Appomattox River, in the neighborhood of Monticello, left their former abodes and came to the west. The Powhatans are said by their descendants to have been once a part of this nation. The probability is that migration took place about, or soon after the year 1632, when the Virginians suddenly and unexpectedly fell upon the Indians, killing all they could find, and cutting up and destroying their crops, and causing great numbers to perish by famine. They came to New River and made a temporary settlement, and also on the head of the Holston.[10]

As to their establishment on the Tennessee River, Haywood states:

> * * * the Cherokees were firmly established on the Tennessee River or Hogohega (the Holston) before the year 1650, and had dominion over all the country on the east side of the Alleghany Mountains, which includes the headwaters of the Yadkin, Catawba, Broad River, and the headwaters of the Savannah.[11]

Thomas[12] expresses the opinion that Haywood's date for the possible migration is clearly in error. If the migration did in fact take place, he asserts it must have been much earlier. This opinion is based on the fact that when De Soto came into northern Georgia in 1540 he found the "Chelaques" or Achalaques in their mountain homes in western North Carolina. He here accepts the identification of the Chelaques with the Cherokee, as have many other historians. Swanton,[13] as the result of later studies, does not accept this identification. Of this, he says:

> It has been usual, and natural, to identify the Chelaque or Xalaque of the De Soto[14] chroniclers with the Cherokee, but if the word Cherokee has the origin I suspect, from Muskogee chilokee (there is no "r" in Muskogee), signifying "people of a different speech", it may not have been applied solely to the

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[9] Haywood, 1823, pp. 226–234.
[10] Ibid., p. 223.
[11] Ibid., p. 225.
[12] Thomas, 1889, p. 89.
[13] Swanton, John R., personal communication.
[14] "Gentleman of Elvas", 1851, p. 52.

Cherokee but as well to other non-Muskogee tribes, such as the Catawba and their allies. If that is the case, the use of the term in the De Soto chronicles does not prove that the Cherokee were then in their historic seats.

As a consequence of this opinion, Swanton regards the intrusion of the Cherokee into the southern mountains as relatively recent, and in partial explanation of this opinion says:

> I am now inclined to agree with Hewitt, contrary to an earlier opinion, that the Tallike or Talliquewi of the Walam Olum were part of the Miami and not the Cherokee.
>
> While Haywood's story of Cherokee origins is unreliable, we have good evidence that they did move down from about the section indicated, New River, along the great war trail west of the Blue Ridge.
>
> It is plain from some early maps (see Popple and Mitchell maps) that the name Hogohego, or Hogohegee, was applied to the Tennessee River and not merely to the Holston. The name appears to refer to the Yuchi.

A very important item of evidence of early Cherokee location is mentioned by Royce, when he states that—

> On various maps of North America, and particularly those of De L'Isle, between the years 1700 and 1712, will be found indicated upon the extreme headwaters of the Holston and Clinch Rivers, "gros villages des Cheraqui." These villages correspond in location with the great nation alluded to in the narrative of Sir William Berkeley's expedition.
>
> Upon the same maps will be found designated the sites of sundry other Cherokee villages, several of which are on the extreme headwaters of "R. des Chaouanons." This river, although indicated on the map as emptying into the Atlantic Ocean to the west of the Santee, from its relation to the other streams in that vicinity, is believed to be intended for the Broad River, which is a principal northwest branch of the Santee. Other towns will also be found on the banks of the Upper Catawba, and they are, as well, quite numerous along the headwaters of the "R. des Caouilas", or Savannah, and of the Little Tennessee.

Of the conditions and situation of the Cherokee at the time of the English settlement Royce says:

> At the time of the English settlement of the Carolinas the Cherokees occupied a diversified and well-watered region of country of large extent upon the waters of the Catawba, Broad, Saluda, Keowee, Tugaloo, Savannah, and Coosa Rivers on the east and south, and several of the tributaries on the Tennessee on the north and west. It is impossible at this late day to define with absolute accuracy the original limits of the Cherokee claim. In fact, like all other tribes, they had no definite and concurrent understanding with their surrounding savage neighbors where the possessions of the one left off and those of the other began. The strength of their title to any particular tract of country usually decreased in proportion to the increase of the distance from their villages; and it commonly followed, as a result, that a considerable strip of territory between the settlements of two powerful tribes, though claimed by both, was practically considered as neutral ground and the common hunting ground of both.
>
> As has already been stated, the extreme eastern settlements of the Cherokee in South Carolina in 1693 were in the district of country lying between the Catawba and Broad Rivers, and no claim has been found showing the existence

at any time of any assertion of territorial right in their behalf to the east of the former stream. But, nevertheless, on Bowen's map of 1752 (obviously copied from the earlier maps), there is laid down the name of "Keowee Old Town." The location of this town was on Deep River, in the vicinity of the present town of Ashborough, N. C. It was a favorite name of the Cherokee among their towns, and affords a strong evidence of at least a temporary residence of a portion of the tribe in that vicinity. * * *

On the borders of Virginia and North Carolina the ancient limits of the Cherokees seem to be also surrounded in more or less doubt and confusion. In general terms, however, it may be said that after following the Catawba River to its source in the Blue Ridge the course of those mountains was pursued until their intersection with the continuation of the Great Iron Mountain range, near Floyd Court-House, Va., and thence to the waters of the Kanawha or New River, whence their claim continued down that stream to the Ohio. At a later date they also set up a claim to the country extending from the mouth of the Kanawha down the Ohio to the ridge dividing the waters of the Cumberland from those of the Tennessee at the mouths of those streams, and thence following that ridge to a point northeast of the mouth of Duck River; thence to the mouth of Duck River on the Tennessee, and continuing up with the course of the latter river to Bear Creek; up the latter to a point called Flat Rock, and thence to the Ten Islands in the Coosa River, etc.

That portion of the country thus covered, comprising a large part of the present States of West Virginia and Kentucky, was also claimed by the Six Nations by right of former conquest, as well as by the Shawnees and Delawares.[15]

Of this claim by the Iroquois Confederacy Ramsey says:

At the time of its earliest exploration, the country east and north of the Tennessee River was not in the occupancy of any Indian tribe. Vestiges were then found, and, indeed, still remain, of an ancient and dense population—indicating higher progress in civilization and the arts than has been attained by more modern tribes in this part of the continent. A fresh hunting camp was occasionally found, * * *.

At the point of time to which these annals have reached, the territory of which we are speaking was claimed, though not occupied, by the Confederacy of the Six Nations. These were called by the early French historians, Iroquois, and by the English, Mohawks. In 1672 these tribes conquered the Illinois and Shawnee Indians, the latter of whom were also incorporated with them. To these conquests they added, in 1685, that of the Miamis, and about the same time carried their victorious arms westward to the Mississippi, and southward to what is now Georgia. In 1711 they incorporated with them the Tuscaroras, when expelled from North Carolina. Governor Pownal, in his "Administration of the British Colonies", says that these tribes carried their arms as far south as Carolina and as far west as the Mississippi, over a vast country, 1,200 miles in length and 600 in breadth, where they destroyed whole nations, of whom there are no accounts remaining among the English: and, continues the same writer, the rights of these tribes to the hunting lands on the Ohio may be fairly proved by their conquests over the Shawanees, Delawares, etc., as they stood possessed thereof at the peace of Ryswick, in 1697. * * *

Such was the aboriginal title to the greater part of Tennessee in 1767, when the white settlers approached its eastern boundary. On the 6th of May of this year a deputation of the Six Nations presented to the superintendent of Indian affairs, a formal remonstrance against the continued encroachments of the whites upon their lands. The subject was immediately considered by the royal government; and near the close of summer, orders were issued to Sir William Johnson, Superintendent of Northern Indian Affairs, instructing him to convene the chiefs, warriors, and sachems of the tribes most interested. Agreeably to these orders, Sir William Johnson convened the delegates of the Six Nations, and their confederates and dependents, at Fort Stanwix (now Utica, N. Y.), October 24. Three thousand two hundred Indians of 17 different tribes, tributaries to the Confederacy, or occupying territories coterminous with theirs, attended. On the 5th of November, a treaty of limits and a deed of cession to the King of England, were signed. In this, the delegates of their respective nations aver that "*they are the true and absolute proprietors of the lands thus ceded*", and that for the consideration mentioned, "we have continued the line *south to the Cherokee or Hogohegee Rivers* (the Holston was thus called), *because the same is, and we declare it to be, our true bounds with the Southern Indians, and that we have an undoubted right to the country as far south as that river.*"

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[15] Royce, 1887, pp. 140–141.

The cession thus made by the Six Nations, of the country north and east of the Tennessee River, is the first deed from any of the aboriginal tribes for any territory within the boundaries of our state. The title of the Confederates to these lands was, by the treaty of Fort Stanwix, forever transferred from them but other tribes contended that the Six Nations had not an *exclusive claim* to them, but that they were the common hunting grounds of the Cherokees and Chickasaws also. In the journal of the commissioners, detailing the progress of the treaty, the tribes represented, etc., no mention is made of delegates in attendance from any of the southern Indian Tribes. It is said by Haywood, that some visiting Cherokees were present at the treaty, who upon their route had killed game for their support, and on their arrival at Fort Stanwix, immediately tendered the skins to the Indians of the Six Nations, saying: "they are yours; we killed them after we passed the big river", as they always designated the Tennessee. This would seem to imply an acquiescence on their part, in the validity of the claim of the Six Nations. These claimed the soil, not as its aboriginal owners, but by right of conquest; and all tradition concurs in admitting their right to that extent. But the Cherokees had long exercised the privilege of hunting upon these lands, and therefore regarded, with jealousy and dissatisfaction, the approaches of the white settlements. Mr. Stuart, the Superintendent of Southern Indian Affairs, was therefore instructed to assemble the southern Indians for the purpose of establishing a boundary with them; and before negotiations with the confederates at Fort Stanwix had begun, he concluded a treaty with the Cherokees at Hard Labour, in Southern Carolina, October 14, 1768. By this treaty it was agreed that the southwestern boundary of Virginia should be a line "extending from the point where the northern line of North Carolina intersects the Cherokee hunting grounds, about thirty-six miles east of Long Island, in the Holston River, and thence down that stream to its junction with the Ohio." This line, however, did not include all the settlements then made; and even during the progress of the treaty the settlers were advancing farther west and erecting their cabins northwest of the Holston and upon the branches of the Clinch and Powell rivers, within the limits of the Indian territory. This fact being ascertained, a subsequent treaty became necessary for the adjustment of a new boundary and the remuneration of the savages for an additional extent of country.[16]

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[16] Ramsey, 1853, pp. 73–77. (Quotations within the quotation are from Monette, J. G.)

In other words, as late as 1768, although it had been ceded to the King of England by the Iroquois, the area of the Clinch and Powell River valleys was still regarded by the Superintendent of Indian Affairs for the Colonies as the territory of the Cherokee, since, by treaty, he recognized their claims.

By 1714 French traders from New Orleans had come among the Shawnee then living on the Cumberland River and the French began the establishment of trading posts along the Mississippi and in the rivers of southern Alabama. This naturally aroused the jealousy of the English settlers. Of this Ramsey says:

> Colonial rivalry prompted each [British and French Colonial governments] to ingratiate itself with and secure the trade and friendship of the native tribes.
>
> In pursuance of this policy, Governor Nicholson, in 1721, sent a message to the Cherokees, inviting them to a general congress, in order to treat of friendship and commerce. The chieftains of thirty-seven different towns met him. He made them presents, smoked with them the pipe of peace, laid off their boundaries, and appointed an agent to superintend their affairs. With the Creeks he also made a treaty of commerce and peace, and appointed an agent to reside among them. In 1730, the projects of the French, for uniting Canada and Louisiana, began to be developed. Already they had extended themselves northwardly from the Gulf of Mexico and had made many friends among the Indians west of Carolina. To counteract their intentions it was the wish of Great Britain to convert the Indians into allies or subjects and to make with them treaties of union and alliance. For this purpose Sir Alexander Cumming . . . having summoned the Lower, Middle, Valley, and Over-hill settlements, met in April the chiefs of all the Cherokee towns at Nequassee, informed them by whose authority he was sent, and demanded of them to acknowledge themselves the subjects of his sovereign, King George, and to promise obedience to his authority. Upon which the chiefs, falling on their knees, solemnly promised obedience and fidelity, calling upon all that was terrible to fall upon them if they violated their promise. Sir Alexander then, by their unanimous consent, nominated Moytoy commander and chief of the Cherokee nation. The crown was brought from Tenassee, their chief town, which, with five eagle tails and four scalps of their enemies, Moytoy presented to Sir Alexander, requesting him on his arrival at Britain, to lay them at his majesty's feet. But Sir Alexander proposed to Moytoy that he should depute some of his chiefs to accompany him to England and do homage in person to the great king. Six of them, accordingly, did accompany him, and, being admitted to the royal presence, promised, in the name of their nation, to continue forever his majesty's faithful and obedient subjects.[17]

Ramsey points out that this is the first historic record of the use of the name Tenassee. This town was on the west bank of the Little Tennessee River, not far from the mouth of Tellico Creek. It was an important town of the Over Hill Cherokee, first visited by Lieut. Henry Timberlake in 1762. Ramsey infers that from the name of this Cherokee Indian town came the name for the great state and the great river. In this connection Swanton[18] says:

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[17] Ibid., pp. 46–47.

> The earliest use of the name Tennessee is probably in the form Tanasqui by Juan Pardo or Juan Vandera. It is given to a town on Tennessee River near Chattanooga. The final "qui" may be added erroneously. The date is 1567.

In carrying out this mission for his King, Sir Alexander[19] used very forceful but rather unusual methods, and by so doing gave us a bit of interesting evidence as to the nature and construction of Cherokee town houses. Of this strange event Williams[20] tells how Sir Alexander Cuming, as an agent of His Majesty, King George, on the night of March 23, 1729, went into the Cherokee town house at Keowee where there were above 300 Indians assembled and caused them to acknowledge King George's sovereignty. He did this in the presence of certain white witnesses that he might have their testimony as a report to his king. Among these witnesses was Ludovick Grant, who came from Scotland and in 1726 went to live in the Cherokee country as a trader among the Over Hill Cherokee.

In his "Relations", published in the South Carolina Historical Magazine, Grant says:

> I must not omit a circumstance pretty extraordinary. Sir Alexander carried with him into the Town House, his gun, Cutlass, and a pair of pistols; and one of the Traders telling him that the Indians never came there armed, and did not like that any should, He answered with a wild look, that his intention was if any of the Indians had refused the King's health to have taken a brand out of the fire that burns in the middle of the room and have set fire to the house. That he would have guarded the door himself and put to death every one that endeavored to make their escape that they might have all been consumed to ashes. * * *[21]

From this most unusual action of Sir Alexander one may surely infer that the town house at Keowee had but one door, for if other means of exit had been available his plan could not have been conceived. Even the presence of windows in such a structure would seem to be denied by this occurrence. Further, unless the walls of the building had been very substantially built, and well constructed, the town house could not have served as a "trap", the peculiar purpose of Sir Alexander on this occasion. The fact that the other white witnesses present were surprised and awed by the statement of Sir Alexander would clearly indicate that no matter what they thought of the ethics of the case or the danger involved, they evidently believed such a "coup" was possible. That is, they too, by attitude, seem to indicate that there was but one door to the Keowee town house.

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[18] Personal communication.

[19] Cuming, 1731, pp. 1–18.

[20] Williams, 1928, p. 132.

[21] Grant, Ludovick, 1909, p. 54.

On this point Williams quotes from the journal of Sir Alexander Cuming as follows:

> March 22: From Boggy Gully they went to Keowee, where they dined, being 20 miles distance: Here Sir Alexander had an Account of the troublesome Disposition of the Cherrokee Indians, particularly the lower Settlements, to whom the Indian Traders pretended they durst not speak, and said that the lower Creeks had endeavored to seduce the Cherrokees to the French Interest, and had gone thence but the Month before to receive Presents from the French; and that upon their Return, An Insurrection of the Cherrokees was expected. At Night Sir Alexander went into the Town-House, where above 300 Indians were assembled; and here engaged the head Warriors to acknowledge his Majesty King George's Sovereignty over them on their Knee, and that they would obey him in every Thing; and that if they violated his Promise, they would become no People. He made their head Men promise to answer for the conduct of the rest. This was a Submission they never made before, either to God or Man. * * * The Indian Traders here, who were Eye-Witnesses, and Joseph Cooper the Interpreter, having declared that what they heard and say done that Night was a thing itself so incredible, that they would not have believed it possible, if they had not seen it themselves, and Nobody in Carolina would believe their Report to be true, for that he himself (viz. the Interpreter Cooper) declared that if he had known beforehand what Sir Alexander would have ordered him to have said, he would not have ventured in the Town-House to have been Interpreter nor would the Indian Traders have ventured to have been Spectators, believing that none of them could have gone out of the Town-House without being murdered, considering how jealous that People had always been of their Liberties: But being engaged by Surprise in the Interpretation of Sir Alexander's Speech, who stood in the midst of them well armed with three Cases of Pistols, a Gun and a Sword under his Coat, he was resolved to go on, whatever should be the Consequence of it. He now believed that what had then passed would so overawe them, as to secure them for some Time to his Majesty's Interest. Sir Alexander, lest he should never see England to make a Report of what had happened made the witnesses sign a Declaration of what they saw and heard, as a Testimony of his Majesty's Sovereignty, whatever became of himself. The witnesses were Sir Alexander Cuming, Joseph Cooper, Interpreter; Ludovick Grant, Joseph Batker, Gregory Haines, Daniel Jenkinson, Thomas Goodale, William Cooper, Guide; Wm. Hatton, John Biles, March 23, 1729–30, at Keowee.[22]

Prior to the mission of Sir Alexander Cuming, Col. George Chicken, in July 1725 was sent by Governor Middleton, of South Carolina, on a mission to the Cherokee. Colonel Chicken visited the Lower Cherokee towns and then went to the Upper or Middle Cherokee settlements. Having accomplished his mission with them, he visited the Over Hill settlements on the Little Tennessee River, accompanied by his son.

In his journal, describing his travels and the events of each day, published by Williams, he lists the towns from which representatives were sent to the council called by him. Among others, the one he called *Tunissee* was undoubtedly the *Tennessee* of Sir Alexander Cuming's report.

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[22] Williams, 1928, pp. 132–133.

In 1756 Fort Dobbs was built near the Yadkin after an agreement by Colonel Waddle, acting for North Carolina and Atta-Culla-Culla, Chief of the Over Hill Cherokee on Little River, who was by Timberlake called the "Emperor" of the Cherokee Nation. About this time, as stated by Ramsey:

> * * * A friendly message was received by Governor Glen from the chief warriors of the Over-hill Settlements in the Cherokee nation, acquainting him that
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> Some Frenchmen and their allies were among their people, endeavoring to poison their minds, and that it would be necessary to hold a general congress with the nation, and renew their former treaties of friendship. Accordingly, the governor appointed a time and place for holding a treaty.
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> Governor Glen needed no argument to convince him that an alliance with such a tribe was, under present circumstances, essential to the security of South-Carolina and her sister provinces, and, accordingly, in 1755, he met the Cherokee warriors and chiefs in their own country.
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> At this treaty a large cession of territory was made to the king, and deeds of conveyance were formally executed by the head men, in the name of the whole people.
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> Soon after this session, Governor Glen built Fort Prince George upon the Savannah, near its source, and three hundred miles from Charleston, and within gunshot of an Indian town, called Keowee. It contained barracks for one hundred men, and was well mounted with cannon, and designed for a defense of the western frontier of the province.
>
> The earl of Loudon, who had been appointed commander of the king's troops in America, and governor of the province of Virginia, came over in the spring of this year. He sent Andrew Lewis to build another fort on Tennessee River, on the southern bank, at the highest point of its navigation, nearly opposite to the spot on which Tellico Block House has since been placed, and about thirty miles from the present town of Knoxville; the fort was called in honour of the earl, Fort Loudon. Lewis informed Governor Dobbs that, on his arrival at Chota, he had received the kindest usage from Old Hop, the Little Carpenter, and that the Indians in general expressed their readiness to comply with the late treaty with the Virginia Commissioners (Byrd and Randolph). They manifested this disposition while the fort was building; but when it was finished, and they were pressed to fulfil their engagements, and send warriors to Virginia, they equivocated. Lewis observed that the French and their Indian allies, the Savannahs, kept a regular correspondence with the Cherokees, especially those of the great town of Tellico. He expressed his opinion that some scheme was on foot for the distress of the English back settlers, and that the Cherokees greatly inclined to join the French.[23]

There is no need here to recite the sad fate which overtook Fort Loudon and its garrison. The manner of its destruction in 1760 has been recorded by Haywood and many others. The loss of the first English fort erected in the State of Tennessee at the time stimulated the warlike spirit of the Cherokee. Not until May 1761, after a large force of British regular troops under Colonel Grant accompanied by a provincial regiment came from Charleston to Fort Prince George and fought the Cherokee near their town of Etchoe were the Cherokee willing to make peace.

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[23] Ramsey, 1853, pp. 50–52.

When peace was declared the Cherokee requested that some officer of the British Army be sent to their Nation as a hostage, to live with them for a time as a pledge of good faith. Lieut. Henry Timberlake volunteered for this dangerous service and some time late in 1761 he visited the capital of the Over Hill Cherokee, Great Chote on Little Tennessee River. He remained several months in that country and prepared in March 1762 his celebrated map of the Cherokee towns on the Little Tennessee. Of the town house at Chote, he says:

> The town-house, in which are transacted all public business and diversions, is raised with wood, and covered over with earth, and has all the appearance of a small mountain at a little distance. It is built in the form of a sugar loaf, and large enough to contain 500 persons, but extremely dark, having besides the door, which is so narrow that but one at a time can pass, and that after much winding and turning, but one small aperture to let the smoke out, which is so ill contrived, that most of it settles in the roof of the house. Within it has the appearance of an ancient amphitheatre, the seats being raised one above another, leaving an area in the middle in the center of which stands the fire; the seats of the head warriors are nearest to it.[24]

Of the Cherokee villages Bushnell says:

> Considering the size and importance of the Cherokee it is surprising how little is known regarding the appearance of their dwellings and other structures. But their villages were not compactly built, as among other tribes. The houses were widely scattered and were often far removed from the center of the community, or village, which was indicated by the town house.[25]

In the early spring of 1776 William Bartram visited the Cherokee town of Cowe, in North Carolina, on the upper reaches of Little Tennessee River. He found a town house situated on a mound 20 feet high in the midst of a village of about 100 houses. This town house was a circular structure large enough to hold several hundred people. It was built in the general form of a circular cone and was some 30 feet in height from the floor to the peak of the roof. Of this structure Bartram says:

> They first fix in the ground a circular range of posts or trunks of trees, about 6 feet high, at equal distances, which are notched at top, to receive into them from one to another, a range of beams or wall plates; within this is another circular order of very large and strong pillars, above twelve feet high, notched in like manner at the top, to receive another range of wall plates; and within this is yet another third range of stronger and higher pillars, but very few in number, standing at a greater distance from each other; and lastly in the

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[24] Timberlake, 1765.

[25] Bushnell, 1919, p. 59.

> center stands a very strong pillar, which forms the pinnacle of the building, and to which the rafters are strengthened and bound together by cross beams and laths, which sustain the roof or covering, which is a layer of bark neatly placed, and tight enough to exclude the rain, and sometimes they cast a thin superficies of earth over all. There is but one large door, which serves at the same time to admit light from without and the smoke to escape when a fire is kindled; but as there is but a small fire kept, sufficient to give light at night, and that fed with small pieces of dry sound wood divested of its bark, there is but little smoke. All around the inside of the building, betwixt the second range of pillars and the wall, is a range of cabins or sophas, consisting of two or three steps, one above the other, in theatrical order, where the assembly sit or lean down; these sophas are covered with mats or carpets, very curiously made of thin splints of Ash or Oak, woven or platted together; near the great pillar in the center the fire is kindled for light, near which the musicians seat themselves, and round about this the performers exhibit their dances and other shows at public festivals, which happen almost every night throughout the year.[26]

Of the location of the town house on top of mounds, Bartram has this to say:

> The council or town house is a large rotunda, capable of accommodating several hundred people; it stands on the top of an ancient artificial mound of earth, of about 20 feet perpendicular, and the rotunda on the top of it being about 30 feet more, gives the whole fabric an elevation of about 60 feet from the common surface of the ground. But it may be proper to observe that this mound on which the rotunda stands is of much ancienter date than the building, and perhaps was raised for another purpose. The Cherokees themselves are as ignorant as we are, by what people or for what purpose these artificial hills were raised; they have various stories concerning them, the best of which amount to no more than conjecture, and leave us entirely in the dark.

Adair reports on the location of town houses as follows:

> * * * every town has a large edifice which with propriety may be called the mountain house in comparison to those already described. But the only difference between it and the winter house or stove is in its dimensions and application. It is usually built on the top of a hill and in that separate and imperial statehouse the old beloved men and head warriors meet on material business, or to divert themselves and feast and dance with the rest of the people.[27]

As offering an interesting side light on the use of town houses by the Cherokee, and as presenting a possible reason for building a new town house on the same site as the older houses which had been destroyed, Thomas offers the following statement:

> According to Mr. Mooney—who furnished the writer with some particulars on the subject in addition to what are found in his paper heretofore mentioned—on account of the sanctity attached to the location in the minds of the people, a new town house was usually built upon the site of the old one. The Cherokee town houses were necessarily located in the immediate vicinity of a stream, and where there was about it a level area. The reasons for this were

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[26] Bartram, 1792, p. 366.

[27] Adair, 1930, p. 453.

> (1) that the dances were held around and about these public houses, frequently beginning inside, and ending on the level area around them; and (2) ceremonial bathing formed an important part of the proceedings connected with their sacred dances, such as green-corn dance and the medicine dance, where the whole body of the performers came out of the town-house to the water, and after certain ablutions, returned thereto. It was necessary, therefore, that the building should be near a stream.[28]

In 1776, as a result of British influence, the Cherokee harassed the frontiers of South Carolina, after the defeat of the British at Sullivan's Island, and the repulse of Sir Peter Parker's fleet at Charleston. Immediate steps were taken to invade the Cherokee country by way of chastisement. General Williams, of South Carolina, in July 1776, raised more than one thousand militia and burned the Cherokee towns of Sugar Town, Soconee, Keowee, Ostatoy, Tugaloo, and Brass Town, and later also Tomassee, Chehokee, and Eustustie.

About this time General Rutherford, of North Carolina, marched an army into the Middle Towns on the Tennessee River, and, as reputed, burned 30 or 40 Cherokee towns. Also, Virginia ordered Col. William Christian to raise an army for immediate action against the Cherokee. His force was increased by the union with some 400 men of the North Carolina militia to a total of over 1,800 men. With this army he destroyed the towns of Neowee, Tellico, and Chillowee.

Those towns known to have engaged in attacks on the frontiers were destroyed, but those which had not so participated were not disturbed. Of these Great Chota and Great Island Town were not burned. Later Tuskiga Town was completely burned. Of this expedition by Colonel Christian, Ramsey makes this statement:

> In the centre of the Cherokee towns, taken by Christian's troops, was found a circular tower, rudely built and covered with dirt, 30 feet in diameter and about 20 feet high. This tower was used as a council house and as a place for celebrating the green corn dance and other national ceremonials. Within it were beds, made of cane, rather tastefully arranged around its circumference. Each tower had a single entrance, a narrow door. There was neither window nor chimney.[29]

With this devastation of their territory, the Cherokee power was broken. Their military importance as a nation was largely extinguished. From this time on, contact with white civilization became so frequent and so intimate that many ancient customs were modified or given up entirely. So rapid and far reaching were the effects of civilization on the Cherokee that a study of his habits and customs from that time on would throw very little light on his life in prehistoric times. This is very noticeable in the change in the manner of house construction, as reported by Schneider in 1783.

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[28] Thomas, 1890, p. 63.
[29] Ramsey, 1853, p. 169.

Brother Martin Schneider, a Moravian missionary, was sent on a mission to the Over Hill Cherokee, December 1783. Upon his return, he wrote a "report of his journey to the Upper Cherokee Towns." This report was included in his "Diary", which was found in the Moravian Archives at Bethlehem, Pa. The full report is included in Williams, Early Travels in the Tennessee Country. After visiting Tommotly, Kahite, and returning to Sitiko, Brother Martin says:

> Their dwelling houses are blocked up of narrow logs about 7 feet high at the Roof, 14 feet long and 10 feet broad, and are well plastered. They have no windows, the door is very small, and the chimney is fixed on the outside. Every family has, besides the dwelling house, still a smaller Hothouse. This has but a very small opening to creep into it and this is their Abode in cold Weather; after the Fire which is made in the Middle is burnt down, the coals are covered with Ashes. Their Couches of Cane fixed round about are their Sleeping Places, which they scarce ever leave before nine o'clock in the morning. Then they make again Fire for the whole Day and at Night they make another. The Old People having but little and their children, till they are 10 years olds, no Cloathes at all, they could not hold it out in cold weather without such Houses.
>
> In the Midst of every Town is, as it were, a round Tower of earth about 20 feet high almost like a Heap where Coals are burnt, on which is a little House, but which have been mostly burnt down in the last week. Here the first Chief climbs up every Morning at the Time of the Work in the Field, and calls the People with a loud voice together; these must come with their Indian-Corn Hoes, and go together in proper order to Work and tho' every Family has its own Field, yet they begin fellowshiply on one End, and continue so one after the other till they have finished all.
>
> Concerning the above mentioned Town House I must still mention, that the Chief in Times of War gets up in the Evening when every one must tell him what he had done that Day, what News he has heard, and what he intends to do the next day.[30]

Hawkins, who visited the Cherokee Town of Tellico on Little Tennessee River about 1798, states that he saw the town house in the midst of the old village. At that time the village had been deserted and the town house was falling in ruins. It was observed by him, however, that the house had been erected on a mound 12 feet high.[31]

Explorations of Cyrus Thomas on Little Tennessee River

Since so many remains of town houses were found in the mounds of the Norris Basin, one can not but be impressed with the striking parallel between these actual finds on Clinch and Powell Rivers and the description given by Timberlake of the Town House of the Over Hill Cherokees on Little Tennessee River in 1762. Since Timberlake wrote of what he saw, with no intent to do other than convey a correct impression, one is driven to the conclusion that the Cherokee town house in use by the Over Hill Cherokee in 1762, on Little Tennessee River, was, except in form (circular), quite similar to those discovered in the Norris Basin.

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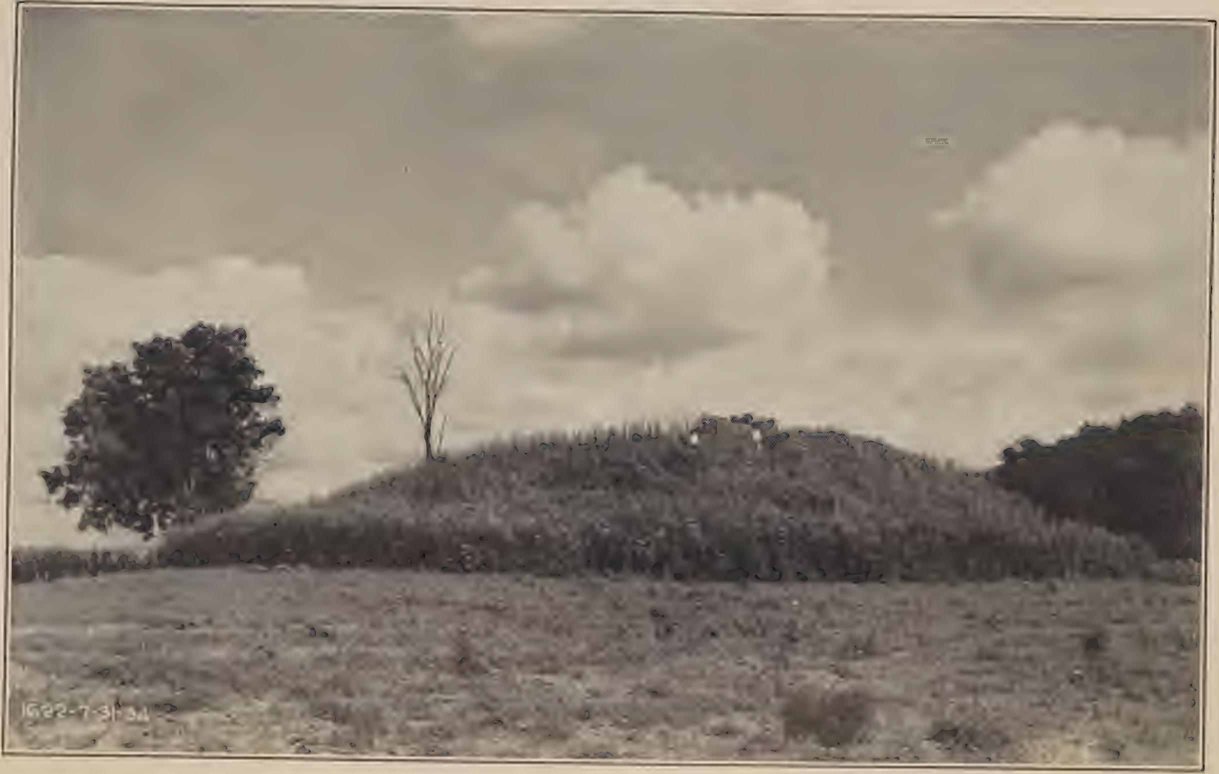
[30] Williams, 1928, p. 261.
[31] Hawkins, 1916, p. 112.

In his Memoirs, Timberlake published a map of the Over Hill Cherokee country, a map which for that day was remarkable for its accuracy and wealth of information. This map has been republished by many later historians and may be seen as plate XXVI of the Twelfth Annual Report of the Bureau of American Ethnology. In this map of the Little Tennessee River country Timberlake shows the location of some ten or more large villages of the Over Hill Cherokee, along the course of the Little Tennessee River. The most important of these villages, named from east to west in order downstream, are: Tellassee, Chilhowey, Halfway Town, Settacoo, Great Chote, Tennessee, Toqua, Tommotley, Toskegee, and Mialaquo, or Great Island. Not only does he locate each of these villages, and show a map of the river and the trails connecting these settlements, together with old Fort Loudon on Tellequo River, but his map actually shows the location of the town house in each village.

After reading Timberlake's description of these Cherokee town houses, and comparing it with the remains found in the Norris Basin, it is quite natural to wonder if a town house site on the Little Tennessee River would show the same archaeological features as those found in the Norris Basin. The question arises as to whether the sites of the old town houses of the Over Hill Cherokee can be definitely located today; and, if so, what story would they have to tell. To obtain a partial answer to these questions the author visited the Over Hill Cherokee country in the spring of 1934 and was greatly surprised to note with what ease these old village sites may still be located. In the vicinity of nearly every village located by Timberlake can be found one or more mounds which, the author believes, in many cases, represent the collapsed town house of the village, where such town houses were "raised with logs" and "covered with earth", as Timberlake says.

In 1881 Cyrus Thomas began for the Bureau of American Ethnology a long series of mound explorations, which continued for several years and covered the eastern United States. During these investigations Thomas excavated, more or less completely, most of the mounds on the Little Tennessee River. Had these remained undisturbed until the present time they would surely have presented a very similar appearance to the mounds of the Norris Basin. Plate 136 shows the mound which today marks Toqua town-house site. The results of these excavations were submitted by the Bureau of American Ethnology, 1891, to the Smithsonian Institution in the Twelfth



Toqua town-house site, Little Tennessee River

Annual Report. This disturbance of these mounds has assisted erosion during the last half century. This erosion has reduced their height; and, in some ways, the mounds were practically destroyed at the time of investigation. Even in the case of those mounds which suffered considerable disturbance, however, enough evidence of their location remains today to easily check the map of Timberlake and to demonstrate its accuracy.

Because of this disturbance, which, according to the report of Thomas, was very general and thorough in most of the larger mounds, there remains but little hope of finding evidence in the mounds mentioned of town-house structures. The evidence sought—of structures, which were raised of logs, thatched with cane, covered with earth, and perhaps burned and allowed to collapse so that the earth on the roof might permit another structure to be built on the same site—has been destroyed. However, a careful study of the reports of these excavations as presented by Thomas seems definitely to show that the excavators did find collapsed and burned town houses in these mounds, although they did not recognize their finds as such, and seemingly had little idea of the real significance of their observations. Although they found burials in a number of these mounds, the interpretation seems to be in error, for the excavators appear to have regarded the burials, where they were found, as the chief features. The opinion is here ventured that the burials were probably intrusive into a mound formed by the collapse of one or more structures which had been built on the site. The burials were not, as the excavators seemed to think, the most important features of the mounds and the reason for their erection. That is to say, no matter how many burials may have been found in any of the larger mounds, the mounds were not properly called burial mounds; i. e., they were not erected for the primary purpose of making a place for burials. They rather represent the collapse of one or more village town houses.

In this connection it is interesting to examine Thomas' report on several of these mounds, and to suggest a reinterpretation of his findings in the light of the facts obtained from the Norris Basin. These extracts of the reports of Thomas are taken from the Twelfth Annual Report of the Bureau of American Ethnology.

Mound No. 1, on the farm of Mr. Boyd McMurray, was known to have been on the site of Chilhowey. Of this mound Thomas says:

> Mound No. 1, circular in form, 4 feet high, and with an average diameter of about 100 feet, was examined by cutting a broad trench through the center from side to side and down to the original soil. No indications of burial were observed nor anything of interest found, except a large fire bed. This was on the original surface of the ground exactly at the center of the mound. It consisted of a layer of burnt clay between 7 and 8 feet in diameter and from 4 to 6 inches thick, and was covered with ashes; encircling the margin was a

> row of water-worn stones. Over this bed was a layer of clay 1 foot in thickness; the remainder of the mound was composed of dark loam like the surrounding soil.[32]

Clearly the mound was not a burial mound. The opinion is ventured that the "large fire bed * * * consisting of a layer of burned clay" was a typical fire basin on the center of the floor of a town house; just such a basin as is shown in plate 100, Site No. 17. The dark loam above the original surface of the ground was the earth which was once on the roof of the town house, which had been gathered from the village site.

Of Mound No. 3, also at Chilhowey, Thomas reports:

> Mound No. 3 stood on the first bottom, in a beautiful level meadow, about 250 feet from the river. Its form was an ellipse, measuring 150 by 122 feet, the longer axis being east and west; height 12 feet, but considerably reduced by the plow. A thorough excavation showed its composition, mode of construction, and contents to be as follows: The top portion, to a depth of 5 feet (except a circular space in the center), consisted of dark, sandy soil, mixed with pieces of broken pottery, flint chippings, and charcoal. This layer, which was beneath the slight covering of recent vegetable mold, did not extend down the curve of the mound toward the base, but was horizontal on the under side. * * * Immediately below this was a horizontal layer of charcoal, 4 to 6 inches thick, extending horizontally over nearly the entire area of the mound at this height, except where interrupted at the center by the conical mass. The coals composing this layer were of cane and small boughs and very closely packed. The earth next under it was very hard for a depth of several inches. From this layer down to the natural surface of the ground, the mound was composed of dark earth similar to that in the upper layer, and in this part were found all the skeletons hereafter mentioned, with the exception of No. 34.[33]

This suggested that the top portion of the mound, 5 feet thick, was composed of earth gathered up from the surface of the village which contained "broken pottery, flint chips, and charcoal." Obviously this earth had once been on the roof of a town house erected here and apparently the bottom of this layer was horizontal, as it rested on the town-house floor when the structure collapsed. The charcoal layer next below was surely a burned and fallen town house. The layer of cane found charred was the remains of the usual cane thatching and the layer of earth under it, characterized as very hard for several inches, was surely the old town-house floor.

Since all this stratification was found well up in the mound, the opinion is ventured that these remnants described represent a secondary structure here, the primary one having been on the original surface at the base of the mound. The body of black soil in which the burials were found seems certainly to have been the roof earth of the primary structure. It is not surprising that if there had been evidence of an earlier and primary structure it should have escaped detection. From this mound 34 extended burials were removed. In the excavation incident to their removal any other evidence might have been overlooked or destroyed, as the burials were regarded as the chief feature. Further, after the "burial layer" was encountered and the skeletons removed, it does not appear from the report that the excavations extended below this level.

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[32] Thomas, 1894, p. 368.

[33] Ibid., pp. 369–370.

Since Thomas was seeking evidence to prove the identity of the "mound builders" with the historic Indians, and regarded similar skeletal material and artifacts as the best proof of his thesis, there was little incentive to seek other types of information. Further, a primary floor, if one existed here, might have been below the original village surface, as has been noted in the Norris Basin (pl. 26, *b*).

Farther down the river Thomas investigated mounds on the site of Settacoo town. Of Mound No. 4 he says:

> Mound No. 4 is known locally as "Citico Mound" and is the largest not only of this group but of the entire section. In shape it resembles half of an egg divided lengthwise, being broadest and highest nearer one end, sloping thence by regular, somewhat curved lines. The length is 220 feet; greatest breadth, 184 feet; greatest height, 14 feet. It may possibly have been flat on top originally, but no satisfactory evidence of this can be had; in fact, its present form seems to be that which it has had from the beginning, so far as can be judged from an examination of its structure. As is shown in the plat, it is located on the first bottom of the Little Tennessee, and though often surrounded by water in times of flood, was never known to be covered. For the space of 6 or 7 acres around it the soil is strewn with fragments of pottery, flint chips, broken stones, animal bones, charcoal, and other refuse. Great numbers of shell beads have been picked up here, and human skeletons have occasionally been plowed up or washed out by high water. * * *
>
> The large mound, No. 4, was thoroughly overhauled to the base. At the highest point, 6 inches below the surface, was a bed of burned clay, circular in form, about 6 feet in diameter and 1 foot thick, and burned so hard as to be very difficult to break up. First three trenches were run in from the margin of the mound from the north, south, and west sides, intersecting at this clay bed. In cutting these, quite a number of skeletons were unearthed, some within 2 feet of the surface, others at a depth of 9 feet, at which depth a bed of yellow sand, slightly mixed with clay and firmly packed, was reached; this lay on the original surface of the ground and extended over the whole area covered by the mound. No skeletons were found in this lower layer or under it. By cutting the trenches in the way described the clay bed was left unbroken until its extent and relation to what lay around it had been ascertained. It was then found that instead of there being a single bed of clay, this was the top one of a series of five. The one in question was level; the others were saucer-shaped * * * each extending upward and outward to the slope of the mound, each succeeding one larger than the one above it, the lowest measuring 12 feet in diameter. Alternating with them were layers of ashes, each resting on its corresponding layer of clay. About 3.5 feet below these was another layer of red clay burned very hard, circular in outline, saucer shaped, and 3 inches thick.[35]

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[35] Ibid., pp. 373–374.

The description appears again to indicate town-house floors with the usual fire basins one above another, suggesting several layers of occupancy. Note should be taken that in none of these reports does any mention of post molds appear. This is to be explained by the fact that trenches were cut through to the center of the mounds, and by such trenching most of the molds, if indeed any were present, would have been in the outer portions of the mound and not thus reached. In driving a trench through a mound by the method described in Thomas' report, it is highly probable that if molds had been crossed they would have been excavated without detection. In black humus-filled sandy soil molds are poorly preserved, easily filled with soft earth, and difficult to trace at best, even by one having experience in such matters.

Of the excavations of the town of Toqua, Thomas reports:

> Continuing our course down the Little Tennessee we come next to the Toco mounds, partly on the lands of Mr. J. L. Johnson and Mr. Callaway, south of the river and just above the mouth of Toco Creek and partly below the mouth of the creek. These mounds are arranged in two groups, one consisting of five mounds, situated above Toco Creek, and the other consisting of three mounds, situated some distance below it. The upper one of these groups * * * corresponds with Toqua on Timberlake's map. * * * The lower group corresponds with Tommotley of Timberlake's.
>
> Mound No. 1, which is known locally as the "Big Toco Mound", is an oval, 154 by 138 feet, the longer axis being east and west. Height at west end, 24 feet; at east end, 18 feet; top flat, but sloped toward the east, the descent at this end being much more gradual than at the other. The flattened top was 94 feet; greatest breadth, 78 feet. The north, west, and south slopes are very steep. * * *
>
> This mound was built chiefly of the dark sandy soil around it, which continued uniform to the depth of 9 feet. Here a layer of hard yellow earth was encountered which continued to the original surface of the ground. Running through this upper layer of dark sandy soil were numerous streaks of thin *layers of yellow sand* and also of *burnt clay*, the latter accompanied by coals and ashes. These layers were found from within 2 feet of the top down to the depth of 9 feet. It was noticeable that many of the skeletons, all of which were discovered in this upper layer, though immediately surrounded by loose earth, had directly over them a layer of thin *burnt clay, usually broken up*.
>
> A little northwest of the center of the mound, at the depth of 2 feet, commenced a series of hearths or fire beds of burnt clay, with layers of ashes between them, placed one below another, much like those found in the large Citico mound heretofore described. These alternate beds continued down to the depth of 6 feet, increasing in diameter. There were no skeletons in this series of fire beds.
>
> In several of the other layers of burnt clay (not the central series) were the remains of burnt stakes which had been driven into the surface of the mound when at these respective heights and the top portion burnt off, leaving unburnt the part in the earth. In some cases these had rotted out, leaving only the impressions of the wood and the bark; in others, where partially charred, the remains were distinct. Some of these were observed within 3 feet of the

surface; others at the depth of 6 feet, and at intermediate depths. There was always around the place where these had stood, a bed of coals and ashes, and in some of them pieces of charred human bones.[36]

It is believed that the layers of yellow sand and burned clay were town-house floors—several of them—one above the other. Clearly the burials were *intrusive* in this mound. They were all in the "upper layer." Many had a layer of *burnt clay* above them which was "*usually broken up*." That is to say, the burial pit intruded into the mound after the collapse of the town house was dug *through* the last town-house floor which was of hard clay. This layer of clay was broken through. After the burial was made, the portions of the layer were thrown back and quite correctly described by the excavator.

Further, for the first time there is a report of *burnt stakes* which were clearly the remains of the logs in the wall of a town house. Finally, there is a report of post molds. This mention of molds is only incidentally made in connection with the finding of the "so-called stakes." Perhaps if no "stakes" had been found, the molds would not have been found, or, if found, not mentioned. It is a matter of regret that the excavator does not give a hint as to the pattern of arrangement of these "stakes" and "impressions." It would have been very satisfying if he could have reported the form of the pattern. While information on this point is now forever lost, acknowledgment must be made of the very important statement that of these "impressions", "some were observed within 3 feet of the surface—others at a depth of 6 feet and at intermediate depths." Here clearly is a definite statement that these post molds were at different levels. It seems reasonable to infer that there were at least three levels of molds in "Big Toco Mound", which would definitely suggest three structures erected in succession on this site.

While it may not be wholly profitable to attempt to glean information from former excavations by reinterpreting the data, the opinion is expressed, with no thought of criticism of earlier work, that had a different method of excavation been employed on the sites on Little Tennessee River, and had more importance been attached to obtaining information, rather than burials, much additional information could have been obtained. Had a definite search for post-mold patterns been made, they would, it is believed, have been found in every one of these large mounds, each of which is centrally located in an old town of the Over Hill Cherokee.

From this study of the early history of East Tennessee it would appear that the valleys of the Clinch and Powell Rivers were in the midst of a territory claimed by the Six Nations—the North Iroquois—

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[36] Ibid., pp. 379–382.

and by the southern branch of the same linguistic family—the Cherokee. The Iroquois ceded this territory to Great Britain in 1767, and the Cherokee gave up their formal claims in 1768. Prior to this time, though both nations used the territory as a hunting ground, there seems to be no evidence, either from the reports of early travelers or from the maps of early explorers, that either of these great nations made any settlements in the Clinch or Powell River Valleys, or in the territory immediately adjoining.

The settlements of the Over Hill Cherokee on Little Tennessee only some 50 miles distant from Norris Basin, as the crow flies, were so well known to the early historians and travelers after the visit of Colonel Chicken in 1725 that it seems impossible that the Cherokee could have had any settlement in the basin at that time, or thereafter, without there having been a definite historical record of such a settlement. Indeed, had any other tribe made any considerable or permanent settlement in the region of the Norris Basin, much later than 1725, such a settlement could hardly have escaped historical recording.

While the study of the early history of the Cherokee in East Tennessee fails to connect them directly with the Clinch and Powell River region, yet their early history does reveal facts which are of importance in the interpretation of the prehistory of the Norris Basin. These facts may be summarized as follows:

(1) The Cherokee built town houses in the midst of every important town.

(2) Every town house was near a stream.

(3) Every town house was erected on an earth mound.

(4) Every town house was raised on logs and thatched with cane. Town houses were always *covered with earth.*

(5) Cherokee town houses were *circular in form.*

(6) Town houses had only one door, and no other opening except a small smoke hole.

(7) Town houses were sometimes destroyed by fire, and fell when partially consumed.

(8) The site of the town house was regarded as consecrated and a new house was usually erected on the site of the old house—i. e., multiple occupancy of town-house sites was the rule.

With the finding in Norris Basin of earth-covered town-house sites, corresponding in many particulars with those described by early travelers as typical of the Cherokee country, interest naturally attaches to the question of what relation, if any, may have existed between these areas.

In many ways the Cherokee town house and those of the Norris Basin are alike. The chief difference is that the Cherokee town houses were *circular*, and those of Norris Basin were always *rectangular*. This difference is important, and by no means to be overlooked. The difference in the shape of the structures required a different method of construction and clearly indicates that though the town houses in the Norris Basin were in Cherokee territory, yet they were not built by the Cherokee.

That the Cherokee town house was always circular we have abundant evidence. Perhaps the best detailed description of its construction is given by Bartram[37] in discussing the town house at Cowe.

In seeming accord with the tradition of the Cherokee migration, Carr,[38] in 1876, found in a mound in Lee County, Va., cedar posts arranged in a circular pattern, which in view of Bartram's description, caused Carr to conclude that the mound was a Cherokee council house. In this conclusion Thomas[39] agreed.

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[37] Bartram, 1792, p. 365.

[38] Carr, 1877, p. 75.

[39] Thomas, 1887, p. 87.

A STUDY OF THE PHYSICAL ANTHROPOLOGY AND PATHOLOGY OF THE OSTEOLOGICAL MATERIAL FROM THE NORRIS BASIN

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The osteological material from the sites described in this report affords some interesting osteometric data, particularly when compared with similar data from other parts of the Mississippi Valley.

As is to be expected, many of the skeletons are not complete enough to yield a perfect series of measurements, but enough material is available to give a fair picture of the structural characters of the race associated with the region under consideration.

In reporting on this material all available measurements have been included for each of the skeletons, even though some of it is fragmentary, but in summaries giving averages and means, only adult males are considered.

In the following data on individual burials all of the measurements are given which were possible for that particular skeleton. The absence of a measurement or index indicates that the material did not permit of the securing of these data.

All measurements were made in the laboratory with the usual osteometric board and calipers and all measurements are recorded in millimeters.

In recording the osteological measurements the following data were considered as important and these data were taken whenever possible:

1. Length of skeleton if extended (vertex to calcaneum).
2. Skull:
    - (*a*) Maximum length.
    - (*b*) Maximum breadth.
    - (*c*) Cephalic index.
    - (*d*) Glabella-inion length.
    - (*e*) Height (basion to bregma).
    - (*f*) Nasal length (nasion to nasospinale).
    - (*g*) Orbits: Maximum length and maximum breadth.
    - (*h*) Occipital foramen: Maximum length and maximum breadth.
    - (*i*) Sagittal-cranial arc (from nasion over vertex to opisthion).
    - (*j*) Horizontal circumference (over glabella and inion).

3. Lower jaw:
    (*a*) Bigonial breadth.
    (*b*) Bicondylar breadth.
    (*c*) Length of ramus.
    (*d*) Breadth of ramus.
4. Long bones (maximum lengths):
    (*a*) Right and left humerus.
    (*b*) Right and left ulna.
    (*c*) Right and left radius.
    (*d*) Right and left femur.
    (*e*) Right and left tibia.
    (*f*) Right and left fibula.

Pathological conditions were noted whenever such were evident and the condition of the teeth were recorded, especially if unusual features were apparent.

In the laboratory studies no descriptions of graves or types of burials were made, since these records are included in the general descriptions of the sites.

Only those burials are here recorded which yielded osteological material suitable for study. Consequently the numbers of the skeletons are not always consecutive. The numbers, however, agree with those recorded in the general descriptions of the sites.

Measurements are given only for those bones which were practically perfect, with good epiphyses and little decomposition, so that in many cases a skeleton which at first glance seems fairly complete in reality yields few measurements which are of anthropometric value.

SITE NO. 3

Eight burials on this site yielded skeletal material which permitted of some accurate measurements. These are recorded as follows:

Skeleton No. 1.—Adult female. Only the skull was well enough preserved to permit of reconstruction and measurement. These measurements are: Maximum length, 162 mm; maximum breadth, 126 mm; cephalic index, 77; glabella-inion length, 142 mm; height, 115 mm; nasal length, 35 mm; length of orbit, 31 mm; breadth of orbit, 34 mm; length of occipital foramen, 35 mm; breadth of occipital foramen, 26 mm; sagittal-cranial arc, 351 mm; horizontal circumference, 421 mm.

Skeleton No. 2.—Female of about 10 years of age. Only the skull yielded measurements. These measurements are: Maximum length, 161 mm; maximum breadth, 141 mm; cephalic index, 87; glabella-inion length, 139 mm; height, 128 mm; nasal length, 31 mm; length of orbit, 31 mm; breadth of orbit, 32 mm; length of occipital foramen, 23 mm; sagittal-cranial arc, 363 mm; circumference, 450 mm; bigonial breadth, 81 mm; bicondylar breadth, 100 mm; length of ramus, 37 mm; breadth of ramus, 26 mm.

Skeleton No. 3.—Adult male. Most of the skeleton in good condition, with the following bone measurements: Skull: Maximum length, 172 mm; maximum breadth, 150 mm; cephalic index, 87; glabella-inion length, 155 mm; height, 135 mm; nasal length, 52 mm; length of orbit, 33 mm; breadth of orbit, 40 mm; length of occipital foramen, 34 mm; breadth of occipital foramen, 28 mm; sagittal-cranial arc, 364 mm; circumference, 500 mm; bigonial breadth, 108 mm; bicondylar breadth, 125 mm; length of ramus, 57 mm; breadth of ramus, 32 mm. Long bones: Right humerus, 318 mm; left humerus, 312 mm; right ulna, 268 mm; left ulna, 267 mm; right radius, 246 mm; left radius, 250 mm; right femur, 440 mm; left femur, 442 mm; right tibia, 376 mm; left tibia, 378 mm. The teeth of this skull were well worn and one was completely decayed.

Skeleton No. 6.—Adult male. Fragmentary. Skull: Maximum length, 186 mm; maximum breadth, 143 mm; cephalic index, 77; glabella-inion length, 172 mm; sagittal-cranial arc, 373 mm; circumference, 523 mm; bigonial breadth, 111 mm; length of ramus, 56 mm; breadth of ramus, 31 mm; length of right radius, 255 mm; right tibia, 380 mm; left tibia, 382 mm. None of the other long bones could be accurately measured.

Skeleton No. 7.—Fragmentary. Age and sex not determinable. Lower jaw complete and with bigonial breadth, 60 mm; bicondylar breadth, 74 mm; length of ramus, 26 mm; breadth of ramus, 19 mm.

Skeleton No. 9.—Youth of about 6 years of age. Only the skull was well enough preserved for measurements. Maximum length, 162 mm; maximum breadth, 133 mm; cephalic index, 82; glabella-inion length, 142 mm; height, 123 mm; nasal length, 36 mm; length of orbit, 30 mm; breadth of orbit, 32 mm; sagittal-cranial arc, 341 mm; circumference, 445 mm; bigonial breadth, 75 mm; bicondylar breadth, 95 mm; length of ramus, 35 mm; breadth of ramus, 25 mm. First permanent molar just erupted.

Skeleton No. 12.—A few fragmentary bones. Skull beyond repair. Left ulna, 266 mm long; left radius, 249 mm; left femur, 461 mm.

Skeleton No. 13.—Adult male. Skull not suitable for measurements. Long bones: Right humerus, 340 mm; left humerus, 336 mm; right ulna, 274 mm; left ulna, 276 mm; left radius, 258 mm; right femur, 459 mm; left femur, 463 mm; left tibia, 394 mm; right fibula, 378 mm.

The averages of the measurements of eight skeletons from Site No. 3 give the following results: Cephalic index, 82; glabella-inion length, 150 mm; height, 125.25 mm; sagittal-cranial arc, 358.4 mm; circumference, 467 mm; bigonial breadth, 87 mm; bicondylar breadth, 98.5 mm; length of ramus, 42.2 mm; breadth, 26.6 mm; right humerus, 329 mm; left humerus, 324 mm; right ulna, 271 mm; left ulna, 269.66 mm; right radius, 250.5 mm; left radius, 252.33 mm; right femur, 449.5 mm; left femur, 455.33 mm; right tibia, 378 mm; left tibia, 384.66 mm; right fibula, 378 mm.

A comparison of these average measurements with the averages from the other sites and with averages of similar measurements made from osteological material from other parts of the Mississippi Valley will be be made later in this report.

SITE No. 5

The bones in the burials on this site were too fragmentary and too badly decomposed to permit of osteometric study. Skeleton No. 2 showed a complete right tibia 293 mm long and a left humerus 315 mm long. The tibiae and fibulae of this skeleton, however, showed interesting bone lesions which are figured and discussed in a later section of this report dealing with pathological conditions.

SITE No. 10

Four burials on this site, all from Mound No. 2, yielded material suitable for study. These may be listed as follows:

Skeleton No. 2.—Adult male. Skull: Maximum length, 170 mm; maximum breadth, 137 mm; cephalic index, 80.6; glabella-inion length, 169 mm; nasal length, 50 mm; length of orbit, 31 mm; breadth of orbit, 39 mm; sagittal-cranial arc, 364 mm; bigonial breadth, 112 mm; bicondylar breadth, 128 mm; length of ramus, 55 mm; breadth of ramus, 36 mm. Long bones: Right humerus, 335 mm; left humerus, 338 mm; right ulna, 268 mm; left ulna, 266 mm; right radius, 249 mm; left radius, 251 mm; right femur, 461 mm; left femur, 456 mm; right tibia, 376 mm; left tibia, 381 mm; left fibula, 355 mm.

Skeleton No. 3.—Adult male. The skull of this skeleton was in fairly good shape, but the long bones were in bad condition. The available measurements follow. Skull: Maximum length, 171 mm; maximum breadth, 155 mm; cephalic index, 84; glabella-inion length, 170 mm; height, 155 mm; nasal length, 53 mm; length of orbit, 36 mm; width of orbit, 40 mm; length of occipital foramen, 34 mm; breadth of occipital foramen, 33 mm; circumference, 520 mm; bigonial breadth, 113 mm; bicondylar breadth, 139 mm; length of ramus, 63 mm; breadth of ramus, 33 mm. Long bones: Right humerus, 325 mm; left humerus, 327 mm; left femur, 451 mm.

Skeleton No. 4.—Adult male. Skull: Maximum length, 179 mm; maximum breadth, 140 mm; cephalic index, 78; glabella-inion length, 165 mm; height, 155 mm; nasal length, 58 mm; length of orbit, 38 mm; breadth of orbit, 39 mm; length of occipital foramen, 35 mm; breadth of occipital foramen, 28 mm; sagittal-cranial arc, 372 mm; circumference, 510 mm; bigonial breadth, 94 mm; bicondylar breadth, 110 mm; length of ramus, 62 mm; breadth of ramus, 34 mm. All teeth well worn with many marginal cavities. Long bones: Right radius, 255 mm; right femur, 457 mm; left femur, 466 mm; right tibia, 380 mm; left tibia, 380 mm.

A very interesting feature of this skeleton was that a flint projectile point was embedded in the sacrum in such a position as to indicate that the individual was bending over with his back to the enemy when the injury was received. This is shown in plate 60, *a*, in this report.

Skeleton No. 5.—Only a part of the lower jaw and some of the long bones of this skeleton, representing an adult of undeterminable sex, were suitable for measurements. The ramus was 61 mm long and 33 mm broad. Long bones: Right humerus, 309 mm; right ulna, 258 mm; left ulna, 261 mm; right radius, 240 mm; left radius, 243 mm; right femur, 423 mm; left femur, 426 mm; right tibia, 356 mm; left tibia, 357 mm.

The averages for the measurements of four skeletons from Site No. 10 are as follows: Skull: Cephalic index, 80.86; glabella-inion length, 168 mm; height, 155 mm; sagittal-cranial arc, 368 mm; circumference, 506.66 mm; bigonial breadth, 106.33 mm; bicondylar breadth, 125.66 mm; length of ramus, 60.25 mm; breadth of ramus, 34 mm. Long bones: Right humerus, 323 mm; left humerus, 332.5 mm; right ulna, 263 mm; left ulna, 263.5 mm; right radius, 248 mm; left radius, 247 mm; right femur, 447 mm; left femur, 449.75 mm; right tibia, 370.66 mm; left tibia, 372.66 mm; right fibula, 368 mm; left fibula, 355 mm.

SITE NO. 11

A single skull from Skeleton No. 1 was the only osteological material from Site No. 11 from which data could be secured. This was apparently the skull of an adult female with the following measurements: Maximum length, 144 mm; glabella-inion length, 130 mm; nasal length, 38 mm; length of orbit, 32 mm; breadth of orbit, 34 mm; sagittal-cranial arc, 325 mm; length of ramus, 37 mm; breadth of ramus, 23 mm. Missing portions of the parietals prevented computation of the cephalic index.

SITE NO. 15

This was an excellent site from the standpoint of osteological material, since of the eight skeletons here reported three of them were in excellent condition, yielding almost complete sets of measurements, and most of the others gave satisfactory data, particularly regarding the skulls.

Skeleton No. 2.—Adult female. Skull: Maximum length, 157 mm; maximum breadth, 146 mm; cephalic index, 93; glabella-inion length, 151 mm; height, 151 mm; nasal length, 47 mm; length of orbit, 33 mm; breadth of orbit, 35 mm; length of occipital foramen, 36 mm; breadth of occipital foramen, 28 mm; sagittal-cranial arc, 331 mm; circumference, 491 mm; bigonial breadth, 97 mm; bicondylar breadth, 120 mm; length of ramus, 50 mm; breadth of ramus, 30 mm. The skull is considerably distorted, probably because of artificial binding, which accounts for the high cephalic index. The teeth are slightly worn. Long bones: Right humerus, 297 mm; left humerus, 291 mm; right ulna, 228 mm; left ulna, 228 mm; right radius, 216 mm; left radius, 211 mm; right femur, 420 mm; left femur, 416 mm; right tibia, 330 mm; left tibia, 327 mm; right fibula, 310 mm.

Skeleton No. 4.—Age and sex not positively determined. Skull: Maximum length, 151 mm; maximum breadth, 153 mm; cephalic index, 100; glabella-inion length, 149 mm; height, 134 mm; nasal length, 50 mm; length of orbit, 36 mm; breadth of orbit, 40 mm; circumference, 487 mm; bigonial breadth, 97 mm; bicondylar breadth, 118 mm; length of ramus, 57 mm; breadth of ramus, 32 mm. All teeth well worn; two molars missing. Long bones: Right humerus, 321 mm; left humerus, 313 mm; right ulna, 254 mm; left ulna, 252 mm; right femur, 447 mm; left femur, 450 mm; right tibia, 367 mm; left tibia, 366 mm; right fibula, 356 mm; left fibula, 362 mm. Skeleton as a whole in excellent condition; skull asymmetrical.

Skeleton No. 5.—Adult male. Only the skull suitable for study. The skull measurements are as follows: Maximum length, 180 mm; maximum breadth, 142 mm; cephalic index, 78; glabella-inion length, 175 mm; sagittal-cranial arc, 373 mm; circumference, 520 mm; bigonial breadth, 106 mm.

Skeletons Nos. 6A, 6B, and 6C.—A triple burial, probably of adult female and two infants. The adult skeleton too badly decomposed for measurement, but with the skull showing a maximum length of 162 mm and the ramus having a length of 59 mm and a breadth of 37 mm. The teeth are all badly worn. One of the infant skulls (6B) is that of a child of from 2 to 3 years of age and gives the following measurements: Maximum length, 142 mm; glabella-inion length, 117 mm; height, 104 mm; nasal length, 28 mm; length of orbit, 29 mm; breadth of orbit, 30 mm; bigonial breadth, 70 mm; bicondylar breadth, 86 mm; length of ramus, 30 mm; breadth of ramus, 20 mm. The age is indicated by the fact that the twenty-fourth-month molar has just erupted, as shown in plate 137, *a*, the ventral view of the reconstructed skull. The other infant skull (6C) is that of a child of about 4 years of age with the following measurements: Maximum length, 148 mm; glabella-inion length, 133 mm; height, 112 mm; nasal length, 33 mm; length of orbit, 29 mm; breadth of orbit, 28 mm; sagittal-cranial arc, 322 mm; bigonial breadth, 69 mm; length of ramus, 29 mm; breadth of ramus, 20 mm. The first permanent molars have not yet erupted.

Skeleton No. 7.—Fragmentary skull of an adult, probably male, giving the following measurements: Maximum length, 194 mm; maximum breadth, 135 mm; cephalic index, 69; glabella-inion length, 168 mm; breadth of ramus, 35 mm. Other parts of the skeleton are not satisfactory for study.

Skeleton No. 8.—The skeleton of an adult male in an excellent state of preservation. Skull: Maximum length, 165 mm; maximum breadth, 141 mm; cephalic index, 85; glabella-inion length, 159 mm; height, 146 mm; length of orbit, 37 mm; breadth of orbit, 35 mm; breadth of occipital foramen, 25 mm; bigonial breadth, 110 mm; breadth of bicondylar, 118 mm; length of ramus, 49 mm; breadth of ramus, 34 mm. Long bones: Right humerus, 277 mm; left humerus, 276 mm; right ulna, 228 mm; left ulna, 224 mm; right radius, 212 mm; left radius, 215 mm; right femur, 396 mm; left femur, 395 mm; right tibia, 328 mm; left tibia, 325 mm; left fibula, 311 mm.

The averages for the osteological measurements of the five skeletons from Site No. 15 are as follows: Cephalic index, 85; glabella-inion length, 150.28 mm; height, 129.40 mm; sagittal-cranial arc, 342 mm; circumference, 499.33 mm; bigonial breadth, 91.5 mm; bicondylar breadth, 110.5 mm; length of ramus, 45.66 mm; breadth of ramus, 29.71 mm. Right humerus, 298.33 mm; left humerus, 293.33 mm; right ulna, 236.66 mm; left ulna, 234.66 mm; right radius, 214 mm; left radius, 213 mm; right femur, 421 mm; left femur, 420 mm; right tibia, 341.66 mm; left tibia, 339.33 mm; right fibula, 333 mm; left fibula, 336 mm. The above figures probably represent good skeletal averages for the region under consideration, since the skeletons seem to be normal, typical, and in good condition.

SITE NO. 16

Only two fragmentary skeletons were available from this site and neither of these yielded enough material to be of importance. The only measurements which can be recorded are as follows:

Skeleton No. 10.—Skull: Maximum length, 182 mm; maximum breadth, 130 mm; cephalic index, 71.4; glabella-inion length, 173 mm; nasal length, 50 mm; sagittal-cranial arc, 312 mm.

Skeleton No. 14.—Fragmentary adult skull of which no measurements are possible except that of the bigonial breadth of the lower jaw which is 114 mm. The right femur is 492 mm long; the left humerus measures 343 mm; left radius, 265 mm; left femur, 494 mm.

Site No. 17

A single burial from Mound No. 1 of this site, listed as "Skeleton No. 1", yielded a skull 162 mm long, 135 mm broad, with the resulting cephalic index of 83.33. The orbits have a maximum length of 34 mm and a maximum breadth of 35 mm. The glabella-inion length is 153 mm. No other cranial measurements are possible and the long bones are entirely fragmentary.

Site No. 19

The outstanding feature of this site is the extreme brachycephalism shown in practically all of the skulls. Of 24 skulls from Site No. 19, 20 have a cephalic index of over 90 and 14 have an index of over 100. (Pl. 138, *b*.)

Certainly any skull with a cephalic index of over 100 must be considered either as pathological or as having had the condition produced by artificial binding of the head. Since a careful examination of these skulls fails to disclose any pathological conditions it must be assumed that the group of aborigines who inhabited this site must have had the practice of binding the head to produce the deformity. The extreme flattening occurs in both the frontal and parietal regions, as shown in plate 139, *c*, and this, of course, has produced a compensatory bulging in the parietal regions on both sides. The method of binding the head to produce this condition did not always result in an equal or uniform pressure, for often the skull is decidedly asymmetrical, as shown in plate 138, *a*. Plates 138, *a*, *b*; 139, *c*, are all from burials from Site No. 19.

Site No. 19 is also important because it yielded more osteological material than any other site in the Norris Basin. Forty skeletons are here reported from this site and many of these were in excellent condition and well suited for osteometric studies. As a result, this site must probably be considered as the most important in the region as regards skeletal material.

The skeletons, numbered to agree with the field notes, and of course not including those burials from which the material was not fitted for study, may be recorded as follows:

Skeleton No. 1.—Adult male. Skull not suitable for measurements but showing badly worn teeth and lower second and third right molars missing. Long bones: Right humerus, 316 mm; left humerus, 311 mm; right ulna, 260 mm; left radius, 233 mm; right femur, 430 mm; left femur, 425 mm; left tibia, 353 mm; right fibula, 342 mm.

Skeleton No. 2.—Adult female not more than 20 years of age. Skull: Maximum length, 161 mm; maximum breadth, 164 mm; cephalic index, 101.8; glabella-inion length, 147 mm; nasal length, 50 mm; length of orbit, 35 mm; breadth of orbit, 37 mm; sagittal-cranial arc, 344 mm; circumference, 503 mm; bigonial breadth, 89 mm; bicondylar breadth, 132 mm; length of ramus, 47 mm; breadth of ramus, 34 mm. Teeth only slightly worn. Cavity in left second lower premolar. The right ulna is 272 mm long. None of the other long bones give complete measurements.

Skeleton No. 3.—Adult female. Skull: Maximum length, 171 mm; maximum breadth, 142 mm; cephalic index, 83; glabella-inion length, 163 mm; nasal length, 48 mm; length of orbit, 32.5 mm; breadth of orbit, 39 mm; breadth of occipital foramen, 29 mm; circumference, 494 mm; bigonial breadth, 98 mm; bicondylar breadth, 119 mm; length of ramus, 57 mm. Teeth only slightly worn but all erupted. Long bones: Right humerus, 299 mm; left humerus, 301 mm; right femur, 428 mm; left femur, 427 mm; left tibia, 355 mm. Epiphyses of ulnae and radii missing so that measurements are impossible. A young individual.

Skeleton No. 4.—Adult male. Skull: Maximum length, 168 mm; maximum breadth, 163 mm; cephalic index, 97; glabella-inion length, 157 mm; height, 132 mm; nasal length, 535 mm; length of orbit, 35 mm; breadth of orbit, 42 mm; length of occipital foramen, 33.5 mm; sagittal-cranial arc, 329 mm; circumference, 517 mm; bigonial breadth, 118 mm; bicondylar breadth, 128 mm; length of ramus, 62 mm; breadth of ramus, 34 mm. Long bones: Right humerus, 338 mm; left humerus, 337 mm; right ulna, 277 mm; left ulna, 277 mm; right radius, 260 mm; left radius, 261 mm; right femur, 458 mm; right tibia, 389 mm; left tibia, 387 mm; right fibula, 379 mm; left fibula, 378 mm. This old man must have been in bad physical condition since practically all of the bones of his skeleton show some pathological condition. His lumbar vertebrae are fused and lipped, bone destruction is evident in the femora, radii, innominate, and wrist bones, fusing has occurred in the bones of the hand, extensive periostitis has involved most of the base of the skull, and some sort of osteomyelitis has completely destroyed the left acetabulum and the head of the left femur. In addition, he had a bad case of pyorrhea, with an excess of bony deposit on the mandible; he had three large molar cavities and his skull was deformed. Aside from this, he was apparently all right—so far as his bones were concerned. It is hoped that other tissues of his body were not as badly diseased as his skeleton. Illustrations and technical descriptions of the above-mentioned pathological conditions are given in a later section of this report.

Skeleton No. 5.—Adult female. Skull: Maximum length, 151 mm; maximum breadth, 158 mm; cephalic index, 104.6; glabella-inion length, 148 mm; height, 135 mm; nasal length, 47 mm; length of orbit, 34 mm; breadth of orbit, 41 mm; sagittal-cranial arc, 315 mm; circumference, 483 mm; bigonial breadth, 111 mm; bicondylar breadth, 120 mm; length of ramus, 54 mm; breadth of ramus, 32.5 mm. Teeth worn; cavities in three molars. Skull deformed. Long bones: Right humerus, 285 mm; left humerus, 275 mm; right ulna, 236 mm; left ulna, 239 mm; right radius, 217 mm; left radius, 217 mm; right femur, 399 mm; left femur, 400 mm; right tibia, 330 mm; left tibia, 329 mm; right fibula, 323 mm.

Skeleton No. 7.—Adult male. Skull: Maximum length, 162 mm; maximum breadth, 172 mm; cephalic index, 106.1; glabella-inion length, 158 mm; height, 155 mm; nasal length, 50 mm; length of orbit, 38 mm; breadth of orbit, 41 mm; length of occipital foramen, 34 mm; sagittal-cranial arc, 364 mm; bigonial breadth, 112 mm; bicondylar breadth, 135 mm; length of ramus, 63 mm; breadth of ramus, 31 mm. Teeth worn; pyorrhea evident; cephalic index indicates abnormality. Long bones: Right humerus, 335 mm; left ulna, 276 mm; left radius, 257 mm; right femur, 488 mm; left femur, 485 mm; right tibia, 411 mm; left tibia, 404 mm.

Skeleton No. 8.—Adult male. The only part of the skull measurable was the lower jaw, with measurements as follows: Bigonial breadth, 111 mm; bicondylar breadth, 123 mm; length of ramus, 47 mm; breadth of ramus, 29 mm. The long bones were in fairly good condition and showed the following lengths: Right humerus, 315 mm; left humerus, 315 mm; right ulna, 264 mm; left ulna, 262 mm; left radius, 247 mm; right femur, 447 mm; left femur, 443 mm; right tibia, 380 mm; left tibia, 378 mm; right fibula, 367 mm; left fibula, 369 mm. The right radius had been broken and healed.

Skeleton No. 9.—Adult male. Skull: Maximum length, 159 mm; maximum breadth, 154 mm; cephalic index, 96.8; glabella-inion length, 154 mm; height, 142 mm; nasal length, 51 mm; length of orbit, 33 mm; breadth of orbit, 36 mm; length of occipital foramen, 34 mm; breadth of occipital foramen, 30 mm; sagittal-cranial arc, 340 mm; circumference, 489 mm; bigonial breadth, 112 mm; bicondylar breadth, 125 mm; length of ramus, 57 mm; breadth of ramus, 32 mm. Long bones: Right humerus, 301 mm; left humerus, 300 mm; right ulna, 254 mm; right radius, 228 mm; left radius, 226 mm; right femur, 418 mm; left femur, 423 mm; left tibia, 353 mm; left fibula, 337 mm.

Skeleton No. 10.—Skull of a child between 5 and 6 years of age with first permanent molar just erupting. Measurements: Maximum length, 150 mm; maximum breadth, 150 mm; cephalic index, 100; glabella-inion length, 135 mm; nasal length, 33 mm; length of orbit, 26 mm; breadth of orbit, 30 mm; breadth of occipital foramen, 33 mm; sagittal-cranial arc, 320 mm; circumference, 441 mm. No long bones studied. It is interesting to note that, according to this cephalic index, the changing of the shape of the head had apparently been accomplished by the time the child had reached the age of 5 or 6 years.

Skeleton No. 11.—A few measurable long bones representing a half-grown individual. Sex undeterminable. Measurements: Right ulna, 239 mm; left ulna, 239 mm; right radius, 216 mm; right femur, 402 mm; left femur, 410 mm; right tibia, 334 mm; left tibia, 327 mm.

Skeleton No. 13.—Adult male. Only the lower jaw and the two humeri were perfect enough to be measured as follows: Bigonial breadth, 104 mm; length of ramus, 60 mm; breadth of ramus, 34 mm; right humerus, 305 mm; left humerus, 308 mm.

Skeleton No. 14.—Adult female. Skull too fragmentary to reconstruct perfectly enough to give accurate measurements, but the breadth is determined as 155 mm. The teeth are well worn and show numerous cavities on their outer surfaces. The following long bones of the legs can be measured: Right femur, 415 mm; left femur, 415 mm; right tibia, 346 mm; left tibia, 350 mm; right fibula, 343 mm. There is a lesion showing three old sinuses on the distal portion of the right femur, which is considerably enlarged.

Skeleton No. 16.—Adult male. Great distortion of the skull prevents cranial measurements. Ramus of lower jaw is 51 mm long and 32 mm wide. The only perfect long bones which can be accurately measured are the following: Right humerus, 302 mm; left humerus, 311 mm; left radius, 240 mm; right femur, 440 mm; left femur, 437 mm; right tibia, 375 mm.

Skeleton No. 17.—Adult male. Entire skeleton in almost perfect condition. One of the best preserved of all of the skeletons from the site. Skull: Maximum length, 156 mm; maximum breadth, 162 mm; cephalic index, 193; glabella-inion length, 152 mm; height, 130 mm; nasal length, 50 mm; length of orbit, 37 mm; breadth of orbit, 40 mm; length of occipital foramen, 39 mm; breadth of occipital foramen, 31 mm; sagittal-cranial arc, 334 mm; circumference, 480 mm; bigonial breadth, 114 mm; bicondylar breadth, 140 mm; length of ramus, 62 mm; breadth of ramus, 34 mm. Teeth worn with considerable reprecipitation of dentine. Long bones: Right humerus, 321 mm; left humerus, 319 mm; right ulna, 267 mm; left ulna, 269 mm; right radius, 250 mm; left radius, 250 mm; right femur, 453 mm; left femur, 453 mm; right tibia, 387 mm; left tibia, 387 mm; right fibula, 369 mm; left fibula, 367 mm. It will be noted that this skeleton shows a rather remarkable symmetry in all skeletal parts.

Skeleton No. 18.—Fragmentary. Adult. Accurate measurements can be made of only three bones, viz: Right ulna, 270 mm; right radius, 250 mm; left humerus, 325 mm. All other bones badly broken and decomposed.

Skeleton No. 20.—Adult male. Reconstruction makes possible fairly satisfactory measurements as follows: Skull: Maximum length, 177 mm; maximum breadth, 149 mm; cephalic index, 78; glabella-inion length, 171 mm; height, 144 mm; nasal length, 54 mm; length of orbit, 36 mm; breadth of orbit, 38 mm; length of occipital foramen, 37 mm; sagittal-cranial arc, 362 mm; circumference, 515 mm; bigonial breadth, 104 mm; breadth of ramus, 38 mm. Teeth only slightly worn. Long bones: Right humerus, 307 mm; right ulna, 268 mm; left ulna, 268 mm; right radius, 250 mm; left radius, 248 mm; right femur, 431 mm; left femur, 433 mm; right tibia, 368 mm; left tibia, 371 mm; right fibula, 362 mm; left fibula, 359 mm.

Skeleton No. 21.—Adult female. Probably about 20 years of age, since the first wisdom tooth is just erupting and the other teeth are only slightly worn on the tops of the cusps. Skull: Maximum length, 147 mm; maximum breadth, 164 mm; cephalic index, 111.56; glabella-inion length, 142 mm; height, 122 mm; nasal length, 50 mm; length of orbit, 32 mm; breadth of orbit, 36 mm; circumference, 481 mm; length of ramus, 53 mm; breadth of ramus, 30 mm. Long bones: Left ulna, 239 mm; left radius, 229 mm; right tibia, 338 mm; left tibia, 339 mm; right fibula, 318 mm; left fibula, 320 mm. The remarkably high cephalic index shown by this skull does not seem to have been produced by flattening, since the frontal and occipital regions seem to show normal curvatures, but there is no evidence of any pathological condition.

Skeleton No. 23.—Adult male. Skull: Maximum length, 154 mm; breadth not measurable and consequently no cephalic index reported; glabella-inion length, 147 mm; length of orbit, 37 mm; breadth of orbit, 39 mm; sagittal-cranial arc, 321 mm; bigonial breadth, 116 mm; length of ramus, 59 mm; breadth of ramus, 37 mm. Long bones: Right humerus, 330 mm; right ulna, 272 mm; left ulna, 273 mm; right radius, 255 mm; right femur, 446 mm; left femur, 453 mm; right tibia, 366 mm; left tibia, 369 mm.

Skeleton No. 24.—Adult male. Skull: Maximum length, 163 mm; maximum breadth, 168 mm; cephalic index, 103; glabella-inion length, 161 mm; height, 141 mm; nasal length, 50 mm; length of orbit, 35 mm; breadth of orbit, 39 mm; length of occipital foramen, 38 mm; breadth of occipital foramen, 30 mm; sagittal-cranial arc, 336 mm; bigonial breadth, 114 mm; bicondylar breadth, 128 mm; length of ramus, 59 mm; breadth of ramus, 35 mm. Long bones: Right humerus, 326 mm; right femur, 443 mm; left femur, 436 mm; right tibia, 371 mm; right fibula, 361 mm.

Skeleton No. 25.—Fragmentary skeleton of adult male. None of the long bones can be accurately measured and the few measurements which can be made of the skull are as follows: Maximum length, 153 mm; maximum breadth, 163 mm; cephalic index, 107; length of ramus, 56 mm; breadth of ramus, 30 mm.

Skeleton No. 26.—Full-grown but young female. Most of the long bones lack epiphyses so that total lengths can not be obtained. Sutural areas of skull bones disintegrated. The following measurements are all that are available: Skull: Maximum length, 153 mm; maximum breadth, 165 mm; cephalic index, 107; glabella-inion length, 151 mm. Long bones: Right femur, 423 mm; left femur, 424 mm; right tibia, 355 mm; left tibia, 363 mm.

Skeleton No. 27.—Adult. Probably female. Skull in bad condition and only the following measurements obtainable: Height, 143 mm; nasal length, 56 mm; length of orbit, 36 mm; breadth of orbit, 40 mm; bigonial breadth, 115 mm; length of ramus, 55 mm; breadth of ramus, 35 mm. Teeth worn and showing several cavities. Vertebrae, flat and long bones well preserved. Long bones: Right humerus, 318 mm; left humerus, 314 mm; right ulna, 267 mm; left ulna, 265 mm; right radius, 251 mm; left radius, 248 mm; right femur, 451 mm; left femur, 448 mm; right tibia, 383 mm; left tibia, 378 mm; left fibula, 356 mm.

Skeleton No. 28.—Adult male. Skull has a maximum breadth of 169 mm and a height of 133 mm; no other cranial measurements possible. Lower jaw: Bigonial breadth, 113 mm; bicondylar breadth, 134 mm; length of ramus, 55 mm; breadth of ramus, 33 mm. Long bones: Right humerus, 308 mm; left humerus, 309 mm; right ulna, 259 mm; left ulna, 267 mm; right radius, 238 mm; left radius, 243 mm; right femur, 431 mm; right tibia, 358 mm.

Skeleton No. 31.—Adult male. Skull: Maximum length, 165 mm; maximum breadth, 160 mm; cephalic index, 96.9; glabella-inion length, 159 mm; height, 141 mm; nasal length, 46 mm; length of orbit, 38 mm; breadth of occipital foramen, 29 mm; length of occipital foramen, 34 mm; sagittal-cranial arc, 331 mm; bigonial breadth, 91 mm. Teeth very badly worn. Long bones: Right humerus, 326 mm; left ulna, 266 mm; right femur, 443 mm; left femur, 444 mm; right tibia, 369 mm; left tibia, 370 mm.

Skeleton No. 32.—Adult. Sex undeterminable. Skull: Maximum length, 147 mm; maximum breadth, 171 mm; cephalic index, 116.32; glabella-inion length, 145 mm. We are suspicious of the other skull measurements because of the great deformity of the cranium which is entirely unnatural. Long bones: Right humerus, 310 mm; right femur, 449 mm; left femur, 452 mm; right tibia, 361 mm; left fibula, 342 mm. This skull shows the highest cephalic index of any, not only from this site but from the entire region. This extreme brachycephalism is assumed to be due to the artificial binding of the head, since there seems to be no pathology involved, and yet the frontal and occipital regions do not show any great amount of flattening. It is difficult to conceive of an apparatus which would so foreshorten the skull and still allow it to retain comparatively normal rotundities.

Skeleton No. 34.—Adult. Sex not determined. Skull: Maximum length, 170 mm; maximum breadth, 157 mm; cephalic index, 92; glabella-inion length, 158 mm; height, 135 mm; length of orbit, 38 mm; breadth of orbit, 40 mm; length of occipital foramen, 33 mm; breadth of occipital foramen, 28 mm; sagittal-cranial arc, 334 mm; bigonial breadth, 111 mm; bicondylar breadth, 121 mm; length of ramus, 53 mm; breadth of ramus, 30 mm. Teeth badly worn, with several cavities. Long bones: Right humerus, 315 mm; left humerus, 313 mm; right ulna, 264 mm; right femur, 443 mm; left femur, 449 mm; right tibia, 371 mm. Other long bones strong, heavy, and well ossified, but with ends broken or disintegrated.

Skeleton No. 35.—The fragmentary skeleton, apparently representing a female of about 20 years of age, is not suitable for osteological measurements. The skull is badly distorted, the pelvis fragmentary, and the long bones badly broken and disintegrated.

Skeleton No. 36.—Adult female. Skeleton in fair condition. Skull: Maximum length, 152 mm; maximum breadth, 149 mm; cephalic index, 98; glabella-inion length, 149 mm; height, 136 mm; nasal length, 47 mm; length of orbit, 35 mm; breadth of orbit, 37 mm; length of occipital foramen, 34 mm; sagittal-cranial arc, 318 mm; bigonial breadth, 88 mm; bicondylar breadth, 111 mm; length of ramus, 54 mm; breadth of ramus, 31 mm. Teeth well worn. Long bones: Left humerus, 294 mm; right ulna, 241 mm; left ulna, 239 mm; right femur, 412 mm; right tibia, 339 mm; left tibia, 338 mm.

Skeleton No. 37.—Fragmentary skull of an infant of about 3 years of age. The skull is 153 mm broad, but other measurements are lacking. The lower jaw shows a bigonial breadth of 79 mm; bicondylar breadth, 89 mm; length of ramus, 36 mm; breadth of ramus, 20 mm.

Skeleton No. 38.—Adult female. Bones in poor condition. Skull: Maximum length, 163 mm; maximum breadth, 163 mm; cephalic index, 100; height, 125 mm; breadth of occipital foramen, 26 mm. Teeth only very slightly worn. Long bones: Left humerus, 299 mm; right femur, 429 mm.

Skeleton No. 39.—Adult male. Skull: Maximum length, 157 mm; maximum breadth, 156.9 mm; cephalic index, 100; glabella-inion length, 156 mm; height, 132 mm; length of orbit, 31 mm; bigonial breadth, 111 mm; bicondylar breadth, 120 mm; length of ramus, 57 mm; breadth of ramus, 33 mm. Teeth well worn and showing several cavities. Long bones: Right humerus, 321 mm; left humerus, 324 mm; right ulna, 266 mm; left ulna, 264 mm; right radius, 245 mm;

left radius, 245 mm; right femur, 436 mm; left femur, 438 mm; right tibia, 380 mm; left tibia, 380 mm.

Skeleton No. 41.—Half-grown individual. Sex not determined. Skull: Maximum length, 176 mm; maximum breadth, 147 mm; cephalic index, 83; glabella-inion length, 169 mm; height, 136 mm; length of orbit, 33 mm; breadth of orbit, 39 mm; breadth of occipital foramen, 29 mm; bigonial breadth, 115 mm; bicondylar breadth, 117 mm; length of ramus, 61 mm; breadth of ramus, 39 mm. Teeth worn with reprecipitation of dentine. Long bones: Right femur, 405 mm; left femur, 404 mm; right tibia, 345 mm; left tibia, 341 mm.

Skeleton No. 41A.—Fragmentary long bones of another individual in the same grave with No. 41. Three of these bones are measurable as follows: Right humerus, 330 mm; right femur, 450 mm; left tibia, 387 mm.

Skeleton No. 42.—Adult male. Only the occipital and facial portion of the skull, parts of pectoral and pelvic regions, and a few long bones suitable for measurements. Skull: Nasal length, 51 mm; length of orbit, 37 mm; breadth of orbit, 38 mm; breadth of occipital foramen, 33 mm; bigonial breadth, 112 mm; bicondylar breadth, 126 mm; length of ramus, 56 mm; breadth of ramus, 35 mm. Long bones: Right femur, 483 mm; left femur, 475 mm; right tibia, 403 mm; left tibia, 399 mm; left fibula, 388 mm.

Skeleton No. 43.—Skull too badly disintegrated to be restored. Lower jaw in good condition. Pectoral and pelvic regions fragmentary. Vertebrae fairly well preserved. Long bones in fair condition. Measurements: Bigonial breadth, 89 mm; bicondylar breadth, 109 mm; length of ramus, 57 mm; breadth of ramus, 36 mm. Long bones: Right humerus, 323 mm; left humerus, 323 mm; right ulna, 270 mm; left ulna, 269 mm; right radius, 243 mm; left radius, 250 mm; left femur, 454 mm; left tibia, 376 mm; right fibula, 364 mm.

Skeleton No. 44.—Adult male. Skull: Maximum length, 158 mm; maximum breadth, 165 mm; cephalic index, 104; glabella-inion length, 152 mm; height, 140 mm; nasal length, 50 mm; length of orbit, 36 mm; breadth of orbit, 38 mm; breadth of occipital foramen, 31 mm; circumference, 515 mm; bigonial breadth, 100 mm; bicondylar breadth, 125 mm; length of ramus, 49 mm; breadth of ramus, 33 mm. Cusps not at all worn; two cavities. The cephalic index here reported may be a little too high, due to faulty reconstruction. Long bones: Right humerus, 226 mm; left humerus, 233 mm; right ulna, 276 mm; left ulna, 276 mm; right radius, 262 mm; left radius, 258 mm; right femur, 459 mm; left femur, 463 mm; right tibia, 390 mm; left tibia, 387 mm; right fibula, 371 mm.

Skeleton No. 45.—Adult male. Skull: Maximum length, 180 mm; maximum breadth, 146 mm; cephalic index, 81; glabella-inion length, 169 mm; height, 135 mm; nasal length, 42 mm; length of orbit, 38 mm; breadth of orbit, 38 mm; breadth of occipital foramen, 30 mm; circumference, 505 mm; bigonial breadth, 115 mm; bicondylar breadth, 129 mm; length of ramus, 60 mm; breadth of ramus, 35 mm. Long bones: Right humerus, 303 mm; right radius, 242 mm; right femur, 441 mm; right tibia, 363 mm. Bones of left side of skeleton not measurable.

Skeleton No. 46.—Adult male. Skull: Maximum length, 159 mm; maximum breadth, 175 mm; cephalic index, 110; glabella-inion length, 159 mm; nasal length, 56 mm; length of orbit, 34 mm; breadth of orbit, 39 mm; circumference, 510 mm; length of ramus, 55 mm; breadth of ramus, 31 mm. Long bones: Right humerus, 320 mm; right ulna, 272 mm; left ulna, 273 mm; right radius, 259 mm; left radius, 254 mm; right femur, 438 mm; left femur, 435 mm; left tibia, 388 mm; right fibula, 368 mm.

Skeleton No. 48.—Fragmentary skeleton of a child about 6 years of age. All of the cartilaginous parts of the bones have disappeared and the epiphyses of all of the long bones are gone. Only the lower jaw is fitted for measurement. This shows a bigonial breadth of 84 mm; bicondylar breadth, 111 mm; length of ramus, 41 mm; minimum breadth of ramus, 25 mm. The first permanent molar is just erupting.

Skeleton No. 49.—Adult female. Skull and other parts of the skeleton in excellent condition. Skull: Maximum length, 161 mm; maximum breadth, 156 mm; cephalic index, 96.7; glabella-inion length, 158 mm; height, 135 mm; nasal length, 49 mm; length of orbit, 33 mm; breadth of orbit, 36 mm; length of occipital foramen, 32 mm; breadth of occipital foramen, 29 mm; sagittal-cranial arc, 329 mm; circumference, 492 mm; bigonial breadth, 111 mm; bicondylar breadth, 125 mm; length of ramus, 56 mm; breadth of ramus, 33 mm. Teeth only slightly worn. Long bones: Right humerus, 320 mm; left humerus, 318 mm; right ulna, 264 mm; left ulna, 258 mm; right radius, 243 mm; left radius, 244 mm; left femur, 424 mm; right tibia, 367 mm; left tibia, 366 mm; right fibula, 351 mm; left fibula, 353 mm.

The averages for the measurements of 40 skeletons from Site No. 19 are as follows:

Skulls: Cephalic index, 98.99; glabella-inion length, 154.60 mm; height, 137.05 mm; sagittal-cranial arc, 334.35 mm; circumference, 497.66 mm; bigonial breadth, 107.25 mm; bicondylar breadth, 124.57 mm; length of ramus, 55.76 mm; breadth of ramus, 33.38 mm.

Long bones: Right humerus, 312 mm; left humerus, 306.78 mm; right ulna, 262.9 mm; left ulna, 262.16 mm; right radius, 244.31 mm; left radius, 244.11 mm; right femur, 438 mm; left femur, 438 mm;

right tibia, 367.16 mm; left tibia, 366.6 mm; right fibula, 353.27 mm; left fibula, 356.9 mm.

We believe that Site No. 19 is another site which should be considered typical of the entire region because of the large number of skeletons represented and the general excellence of the material. Even the distorted skulls which are so characteristic of this site are doubtless entirely typical of the population as a whole and represent a tribal custom in the matter of head binding.

SITE No. 20

It has been pointed out in a previous section of this report that the burials in Site No. 20 were not in individual graves or separate interments but consisted of a large number of human bones thrown promiscuously into a single pit.

This being the case, there is, of course, no possibility of associating the bones or determining separate skeletons. Since, however, many of the skulls and a large number of the other bones are available for measurements, they are here reported. The skulls are listed and described as follows:

Skull No. 1.—Adult male. Maximum length, 174 mm; maximum breadth, 141 mm; cephalic index, 81; glabella-inion length, 165 mm; height, 143 mm; nasal length, 52 mm; length of orbit, 33 mm; breadth of orbit, 36 mm; length of occipital foramen, 35 mm; breadth of occipital foramen, 31 mm; sagittal-cranial arc, 359 mm; circumference, 496 mm; bigonial breadth, 94 mm; length of ramus, 58 mm; breadth of ramus, 32 mm.

Skull No. 2.—Adult male. Maximum length, 175 mm; maximum breadth, 139 mm; cephalic index, 80; glabella-inion length, 168 mm; nasal length, 55 mm; breadth of orbit, 40 mm; sagittal-cranial arc, 365 mm; bigonial breadth, 106 mm; bicondylar breadth, 111 mm; length of ramus, 53 mm; breadth of ramus, 35 mm. The teeth are slightly worn and show numerous cavities.

Skull No. 3.—Adult male. Maximum length, 175 mm; maximum breadth, 142 mm; cephalic index, 81; length of orbit, 36 mm; length of occipital foramen, 39 mm; breadth of occipital foramen, 30 mm; sagittal-cranial arc, 358 mm; circumference, 503 mm; bigonial breadth, 97 mm; bicondylar breadth, 113 mm; length of ramus, 55 mm; breadth of ramus, 31 mm. Teeth only slightly worn.

Skull No. 4.—Sex undetermined. Old individual. Bones entirely ossified. Maximum length, 202 mm; maximum breadth, 130 mm; cephalic index, 64.35; glabella-inion length, 182 mm; height, 157 mm; length of occipital foramen, 34 mm; breadth of occipital foramen, 29 mm; sagittal-cranial arc, 421 mm; circumference, 514 mm; bigonial breadth, 100 mm; length of ramus, 58 mm; breadth of ramus, 33 mm. Teeth badly worn and decayed. This skull has the lowest cephalic index, not only of all of those of this site but of any in the entire basin, and is one of the three skulls from this site which are distinctly dolichocephalic.

Skull No. 5.—Adult female. Maximum length, 166 mm; maximum breadth, 141 mm; cephalic index, 84.9; glabella-inion length, 155 mm; height, 141 mm; nasal length, 47 mm; length of orbit, 35 mm; breadth of orbit, 35 mm; length of occipital foramen, 34 mm; breadth of occipital foramen, 28 mm; sagittal-cranial arc, 344 mm; circumference, 487 mm; bigonial breadth, 98 mm; bicondylar breadth, 118 mm; length of ramus, 54 mm; breadth of ramus, 36 mm.

Skull No. 6.—Fragmentary. Sex and age undetermined. Maximum length, 160 mm; glabella-inion length, 149 mm; height, 145 mm. No other measurements securable.

Skull No. 7.—Adult female. Maximum length, 175 mm; maximum breadth, 134 mm; cephalic index, 76; glabella-inion length, 167 mm; nasal length, 48 mm; length of orbit, 32 mm; breadth of orbit, 35 mm; sagittal-cranial arc, 361 mm.

Skull No. 8.—Adult male. Maximum length, 160 mm; maximum breadth, 150 mm; cephalic index, 93; glabella-inion length, 156 mm; sagittal-cranial arc, 347 mm; circumference, 491 mm.

Skull No. 9.—Large, heavy, well-ossified; probably an adult male, but in bad condition. The only accurate measurements which can be given are those of 158 mm for maximum length and 149 mm for glabella-inion length.

Skull No. 10.—Adult male. Maximum length, 169 mm; maximum breadth, 151 mm; cephalic index, 89; glabella-inion length, 159 mm; height, 145 mm; breadth of occipital foramen, 32 mm. No other measurements possible.

Skull No. 12.—Adult female. Maximum length, 153 mm; maximum breadth, 141 mm; cephalic index, 92; glabella-inion length, 145 mm; nasal length, 52 mm; length of orbit, 35 mm; breadth of orbit, 35 mm; bigonial breadth, 95 mm; length of ramus, 54 mm; breadth of ramus, 35 mm. Teeth slightly worn.

Skull No. 13.—Adult male. Maximum length, 200 mm; maximum breadth, 134 mm; cephalic index, 67; glabella-inion length, 179 mm; height, 151 mm; nasal length, 51 mm; length of orbit, 33 mm; breadth of orbit, 39 mm; length of occipital foramen, 38 mm; breadth of occipital foramen, 30 mm; sagittal-cranial arc, 420 mm; circumference, 528 mm; bigonial breadth, 102 mm; bicondylar breadth, 129 mm; length of ramus, 60 mm; breadth of ramus, 34 mm. The teeth are not only badly worn but show on the upper jaw a heavy sclerotic hyperostosis.

This is another of the dolichocephalic skulls from Site No. 20 and while it does not have the lowest cephalic index it is actually the longest of any of the skulls from the entire region (pl. 139, *a*).

Skull No. 14.—Adult female. Maximum length, 181 mm; maximum breadth, 133 mm; cephalic index, 72.4; glabella-inion length, 168 mm; height, 143 mm; nasal length, 51 mm; length of orbit, 36 mm; breadth of orbit, 35 mm; bigonial breadth, 93 mm; bicondylar breadth, 119 mm; length of ramus, 57 mm; breadth of ramus, 31 mm. The teeth are slightly worn. This skull shows undoubted evidence of burning, but whether or not this represents accidental charring after burial it is impossible to determine. It is distinctly dolichocephalic (pl. 140, *a*).

It will be noted that only in a few cases was it possible to positively associate the lower jaws with the skulls to which they belonged. Seven odd mandibles which were suitable for measurement are therefore reported separately as follows:

No.	Bigonial breadth	Bicondylar breadth	Length of ramus	Breadth of ramus
	Millimeters	*Millimeters*	*Millimeters*	*Millimeters*
1	62	100	28	19
2	84	111	37	29
3	95	114	49	29
4	97	117	50	30
5	101	128	53	33
6	104	133	59	34
7	106	----------	61	36

Since the skeletal material from Site No. 20 was in entire disarray, the bones being found in the pit in the utmost confusion, it is impossible to determine the relationship of the long bones either with each other or with the other bones of the skeleton. Consequently they can be reported only as separate bones. The various long bones which were suitable for measurements gave the following lengths in millimeters when arranged in order of lengths:

Right femora: 427; 431; 434; 440; 441; 441; 480.
Left femora: 380; 409; 415; 426; 432; 437; 438; 442; 457.
Right tibiae: 335; 342; 353; 358; 366; 382.
Left tibiae: 320; 320; 335; 350; 385; 386.
Right fibulae: 349; 369.
Left fibulae: 330; 342; 385.
Right humeri: 273; 291; 306; 309; 337.
Left humeri: 270; 289; 301; 309; 314; 314.
Right ulnae: 172; 225; 244; 252; 280.
Left ulnae: 225; 243; 252; 253; 254; 260.
Right radii: 115; 208; 223; 238; 240; 243; 253; 255.
Left radii: 114; 214; 238; 238; 263.

The anthropometry of Site No. 20 certainly suggests that here we are dealing with an intrusive group when the osteological measurements are compared with those from the other sites in the region. The bones are shorter, heavier, showing more indication of musculature, and the individuals were probably shorter in stature. Most significant, however, is the great contrast in craniology. The skulls from all of the other sites are distinctly brachycephalic with many evidences of artificial deformation; three of the skulls from Site No. 20 are definitely dolichocephalic, the average cephalic index is 79.99, while the mean cephalic index is 76, which throws the entire group barely into the mesocephalic division. When in addition to this osteological evidence we take into consideration the type of burial, we would suspect that the skeletons of Site No. 20 represent a group of invaders, possibly killed in battle, and their bodies thrown unceremoniously into a pit. This is of course a mere conjecture, but the fact remains that the material from Site No. 20 does not conform in osteometry, in location, nor in the method of burial with that of the other sites in the area.

SITE NO. 22

Only one skeleton from Site No. 22 was in good enough condition to be studied and measured. This skeleton is reported as follows: *Skeleton No. 17.*—Adult male. Skull: Maximum length, 171 mm; maximum breadth, 157 mm; cephalic index, 91; glabella-inion length, 160 mm; height, 140 mm; nasal length, 50 mm; length of orbit, 35 mm; breadth of orbit, 37 mm; length of occipital foramen, 32 mm; breadth of occipital foramen, 30 mm; sagittal-cranial arc, 341 mm; circumference, 520 mm; bigonial breadth, 110 mm; bicondylar breadth, 131 mm; length of ramus, 58 mm; breadth of ramus, 34 mm. The teeth are well worn. Long bones: Right humerus, 317 mm; left humerus, 318 mm; left radius, 244 mm; right femur, 453 mm; left femur, 454 mm; left tibia, 378 mm.

In attempting to make a summary of the data furnished by the skeletal material from the Norris Basin we have had two prime objects in view: (1) To attempt to construct an anthropometric picture of the group of aborigines which inhabited this region, and (2) to compare this group with other groups found elsewhere in the Mississippi Valley.

To accomplish these two objects it is necessary to make a brief tabulation of the more important of the measurements which enter into consideration. In making this tabulation we have omitted the data from Site No. 20, since, as we have stated, this seems to represent intrusive material. Also, we have followed the usual anthropometric practice of considering only the measurements of adult males.

Considering first the skulls, of which 23 were measured, we have the following summary:

SKULLS

	Millimeters
Length:	
Maximum	194
Minimum	147
Mean	165
Average	166. 82
Breadth:	
Maximum	175
Minimum	135
Mean	156
Average	154. 36
Cephalic index:	
Maximum	116. 3
Minimum	77
Mean	92
Average	92. 5
Glabella-inion length:	
Maximum	175
Minimum	145
Mean	158
Average	160
Height:	
Maximum	155
Minimum	125
Mean	140
Average	140
Sagittal-cranial arc:	
Maximum	373
Minimum	329
Mean	341
Average	349. 73
Circumference:	
Maximum	530
Minimum	480
Mean	510
Average	507. 64

In addition to the data shown in the above summary, it may be noted that the skulls are in general asymmetrical, rather thin walled, show a rather sloping or flattened frontal region, a low cranial arch, and in most cases an occipital flattening. The cheek bones are high and far apart. The bicondylar breadth is great as compared to the bigonial breadth and to the length of the ramus. The eye sockets are uniformly wider than high and in many cases more or less rectangular. The above data were secured from enough specimens to insure, we believe, a representative set of means and of averages.

Corresponding data for the lower jaws of 28 adult males may be tabulated as follows:

LOWER MAXILLARY

	Millimeters
Bigonial breadth:	
Maximum	118
Minimum	94
Mean	111
Average	109. 8
Bicondylar breadth:	
Maximum	140
Minimum	110
Mean	125
Average	125. 8
Length of ramus:	
Maximum	63
Minimum	47
Mean	57
Average	56. 86
Breadth of ramus:	
Maximum	39
Minimum	29
Mean	34
Average	33. 34

The data for the long bones, tabulated as usual from the measurements of 24 undoubted adult males, are as follows:

	Millimeters		*Millimeters*
Humerus:		Femur:	
Maximum	343	Maximum	492
Minimum	277	Minimum	418
Mean	321	Mean	450
Average	319. 45	Average	454. 15
Ulna:		Tibia:	
Maximum	277	Maximum	411
Minimum	228	Minimum	328
Mean	267	Mean	376
Average	264. 64	Average	371. 93
Radius:		Fibula:	
Maximum	265	Maximum	388
Minimum	212	Minimum	311
Mean	249	Mean	362
Average	247. 17	Average	359. 48

Some of the facts brought out in the preceding report on skeletal measurements are worthy of special comment. It is interesting to note, for example, the very close agreement between means and averages, especially in those cases representing hundreds of measurements. It is interesting, again, to note how uniformly the measurements of the long bones on the left side of the skeleton are greater than the corresponding bones on the right side. The long bones are fairly light, symmetrical, and indicate a rather weak musculature.

Unfortunately there was not a single fully extended burial in the entire Norris Basin, and therefore there were no measurements of skeletal lengths obtainable from the graves. Using the usual methods of determining stature from the lengths of the long bones we find that the average individual was probably a little over 1,700 millimeters in height, which would throw this group of aborigines into the anthropological division designated as "above average" in stature.

On the basis of the above figures it is possible to reconstruct, in a fairly satisfactory manner, a picture of the appearance of the individual in the flesh. He was probably a little above medium height, rather slightly but gracefully built, not heavy, and inclined to use his right hand rather than his left. He had a brachycephalic or mesocephalic skull, somewhat deformed because of the binding of his head as an infant. He was broad-faced, wide-eyed, with high cheek bones and a sloping forehead. He had bad teeth, was susceptible to pyorrhea, and often subject to rheumatism or arthritis. The women were smaller in stature, lighter boned, but otherwise with the same skeletal characters.

The above characterization does not, of course, apply to the individuals represented in Site No. 20, since, as we have previously stated, the skeletal material from this site does not conform at all with that from the other sites. This is easily seen if the mean measurements of some of the important bones are tabulated in parallel columns. Such a tabulation shows the following contrasts:

	Site No. 20	Other sites
Skull:	*Millimeters*	*Millimeters*
Maximum length	174	165
Maximum breadth	141	156
Height	149	140
Cephalic index	76	92
Long bones:		
Humerus	304	321
Ulna	248	267
Radius	238	249
Femur	436	450
Tibia	344	376
Fibula	342	362

The above comparison certainly indicates that the individuals from Site No. 20 were distinctly dolichocephalic in character with a long narrow head with a high dome; these skulls also showed no artificial deformation. The skulls from the other sites agree in being brachycephalic with a low dome and with generally both frontal and occipital flattening.

The long bones show that the individuals from Site No. 20 were low in stature, the probable average height being not over 1,600 millimeters, the anthropological group of "below medium" in stature. It has been pointed out that the individuals from other sites, as indicated by the above measurements, were above average in height.

Another comparison which we believe to be of interest is that of the Norris Basin material with prehistoric skeletons from other parts of the Mississippi Valley.

The writer has had the opportunity to study and measure many hundreds of skeletons, mostly from Kentucky, and the greater part of this material belongs to a group which we have called "pre-Algonquin" and which certainly represents a group of Algonquian stock. Careful records have been kept over a considerable period of years of the anthropometry of this material, so that we have a series of measurements which are so extensive that we believe the averages and means are reliable. It has been interesting to compare these records of Kentucky material with the data from Tennessee. In making this comparison the means rather than averages are used, since we believe that while in most cases there is practically no difference, the mean is somewhat more reliable, since it is less influenced by an occasional fluctuating variation.

A tabulation of the more significant mean measurements of the two groups is as follows:

	Norris Basin	Kentucky "Algonquins"
Skull:	*Millimeters*	*Millimeters*
Maximum length	165	163
Maximum breadth	156	141
Glabella-inion length	158	165
Height	140	148
Sagittal-cranial arc	341	346
Circumference	510	488
Cephalic index	92	86
Long bones:		
Humerus	321	323
Ulna	267	256
Radius	249	250
Femur	450	436
Tibia	376	362
Fibula	362	350

It will be seen at once from the above that the two groups agree very closely indeed in all osteological measurements. The Tennessee group is more brachycephalic but this may be easily due to the deformation of the skull which seems to have been practiced more generally in the Tennessee area than in the various Kentucky regions from which material was obtained. The Tennessee skulls are slightly larger and have a lower dome. In the other parts of the skeleton the mean differences are so slight as to be negligible. The Kentucky groups seem to show a somewhat shorter leg and the stature was doubtless lower, but an attempt to draw distinctions between other measurements would be pedantic. In addition to the close agreement in actual measurements, the bones of the two groups are entirely similar in general contour, musculature, and other features. We are of the opinion that the aborigines who inhabited the Norris Basin are of the same stock and probably closely related to the groups which are found farther north and west in the Mississippi Valley.

It is interesting to note, also, that the material from Site No. 20 agrees very closely with material found in Kentucky, which has been tentatively determined Iroquoian. There is considerable evidence to show the presence of dolichocephalism in certain Iroquoian groups and it may be that the long-headed individuals from Site No. 20 represent such a group and that the suspected "invasion" which we have conjectured was an Iroquoian invasion.

Pathology

The writer is greatly indebted to Dr. C. N. Kavanaugh, Dr. E. S. Maxwell, and Dr. J. B. Juett, all of Lexington, Ky., for their diagnoses of various pathological conditions presented in this report.

In general the bone pathology is much the same as that which has often been reported from other sites in the Mississippi Valley. Various types of lesions which might represent one or more of a number of different diseases are common and it is seldom possible to make a positive diagnosis, but a few can probably be definitely diagnosed.

The individual skeleton showing the largest amount of pathology was doubtless the old man represented by Burial No. 4 in Site No. 19. This skeleton showed a complete fusion of the lumbar vertebrae in all of the joints and the same condition was shown in the right wrist, where several of the carpal bones are fused and the head of the third metacarpal is fused with the carpals (pl. 141). The same skeleton showed complete destruction of the left femur with some proliferation on the denuded surface and marked bony destruction of the left acetabulum with late bony proliferation (pl. 143, *b*). The same individual had a hypertrophic arthritis of the spine, atrophic changes in the shaft of the left femur, extensive periostitis involving the upper portions of the occipital bone and the mesal and posterior portions of both parietal bones, together with a considerable amount of dental pathology, which was noted in the discussion of this burial in a preceding section of this report.

Burial No. 2 of Site No. 5 showed proliferative periostitis of both tibiae and fibulae as represented in plate 142. The condition of the fibulae as compared with normal bones is shown in plate 143, *a*. The same figure shows the radii of the skeleton from Burial No. 8, Site No. 19, one of which shows a healed fracture with displacement at the proximal end. This skeleton also showed hypertrophic arthritis of the spine.

An interesting and rather peculiar lesion was found on the right femur of the skeleton in Burial No. 14, Site No. 19. This is shown in plate 145. In this bone there are evidences of three old sinuses and the entire distal half of the bone is greatly enlarged, much roughened, and covered by dense bone. The cause of this condition is conjectural. The left femur of the same skeleton is entirely normal. A posterior view of the pair is shown in plate 144.

In Skull No. 14 of Site No. 20 the occipital region is badly burned, but whether the burning took place before or after death can not be determined. The same skull, which is shown in plate 140, *a*, shows old healed osteomyelitis of the frontal bone with five distinct pits and several smaller depressions.

A most interesting example of the healing of a broken bone is shown in a femur from Burial No. 15 of Site No. 22. Here can be seen a healed comminuted fracture with massive callous formation with a cleft from which a sequestrum has disappeared. The result of this healing must, of course, have resulted in a great shortening of the leg (pl. 140, *c*).

An example of Paget's disease of the bone was found in a skull fragment from Site No. 20. The fragment showed clearly the massive thickening and great density which is characteristic of that disease (pl. 140, *b*).

Frequent examples of hypertrophic arthritis were found in the miscellaneous vertebrae from Site No. 20. It will be recalled that in the burials in this site the bones were not in anatomical order but had been thrown promiscuously into a pit in great confusion so that individual skeletons were not determinable. Many of the vertebrae were fused and many showed extensive lipping on the cephalic and caudal anterior edges and heavy deposits on the anterior surfaces.

Other pathological conditions encountered are those which have been commonly reported from many prehistoric sites and do not warrant special mention. Various types of osteomyelitis and periostitis are frequently noted and are interesting only in that they indicate that pre-Columbian man was subject to many of the same diseases found in civilized man today, and it may be assumed that these osteological conditions were due to the same causes—trauma, pyrogenic infection, tuberculosis, and perhaps even syphilis.

Asymmetry is common, but so far as we can discover has no pathological cause, even though the deformity is often so great that it must have given the individual a most peculiar appearance. Such an example is shown in the *norma verticalis* of the skull from Burial No. 5 of Site No. 19 (pl. 146, *a*).

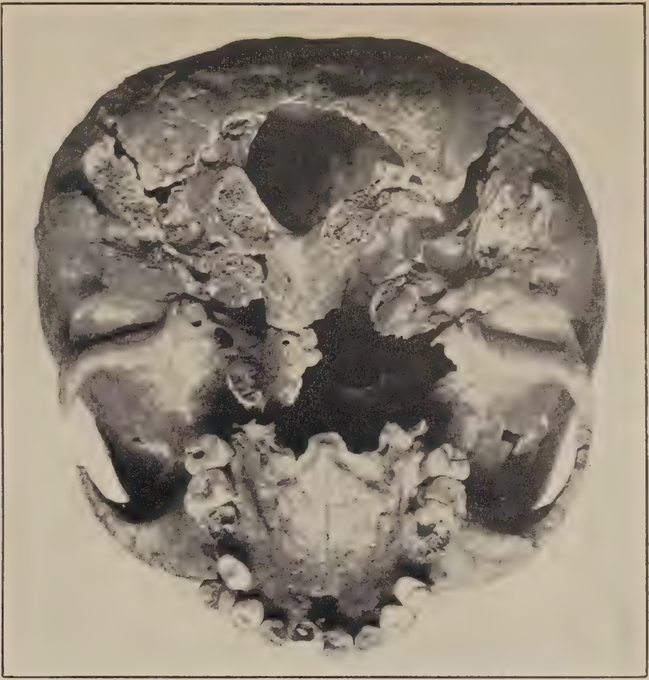
DENTAL PATHOLOGY

The results of the study of the dental pathology of the Norris Basin material agree entirely with the results of similar studies which have been made on other groups of aborigines in the Mississippi Valley.

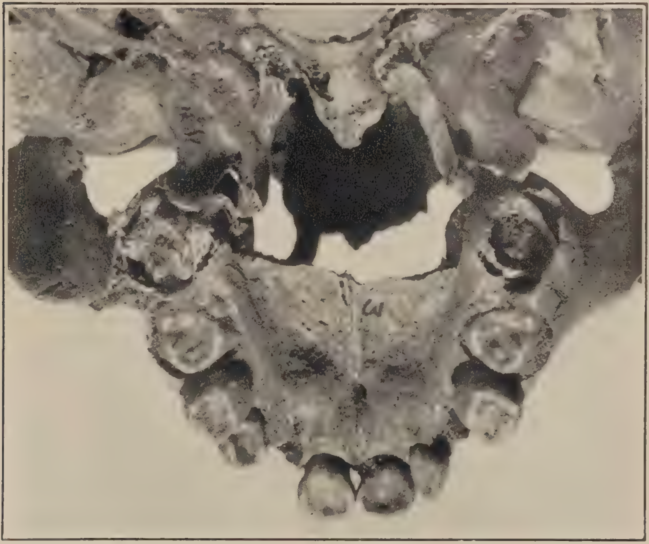
The teeth are, in general, in bad condition, worse than those of the average civilized man of today. In spite of the common notion to the contrary, it is evident that these primitive people had as many and as varied troubles with their teeth as do the civilized races. Pathological conditions in the teeth are extremely common and represent most of the diseases and malformations found in modern man.

By far the most noticeable condition is the great abrasion shown in practically all of the teeth of adults. By the time the individual had reached middle life the teeth had become so worn that the cusps had often entirely disappeared and the enamel lost from the whole surface.

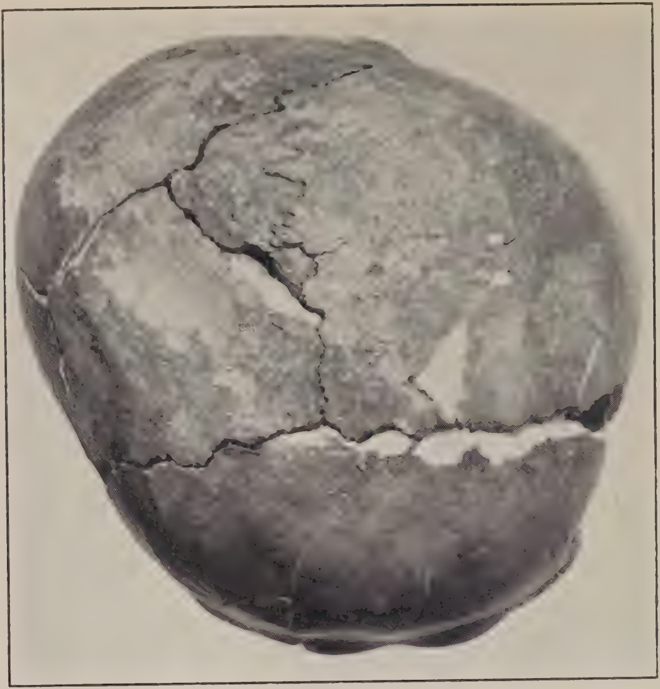
Irregular occlusion is very common. The usual type seems to be a projection of the lower mandible so that the inner surface of the lower and the outer surface of the incisors are much worn.



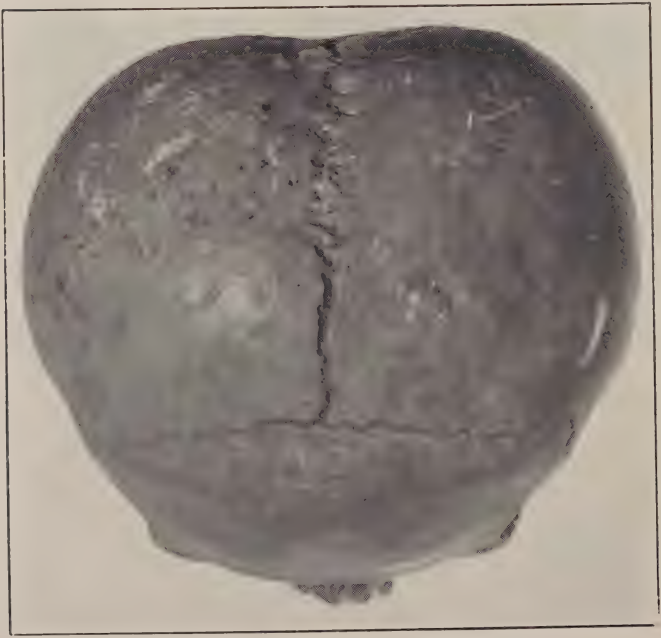
a. Infant skull showing erupting molars and distinct notching. Site No. 15, Burial No. 6B.



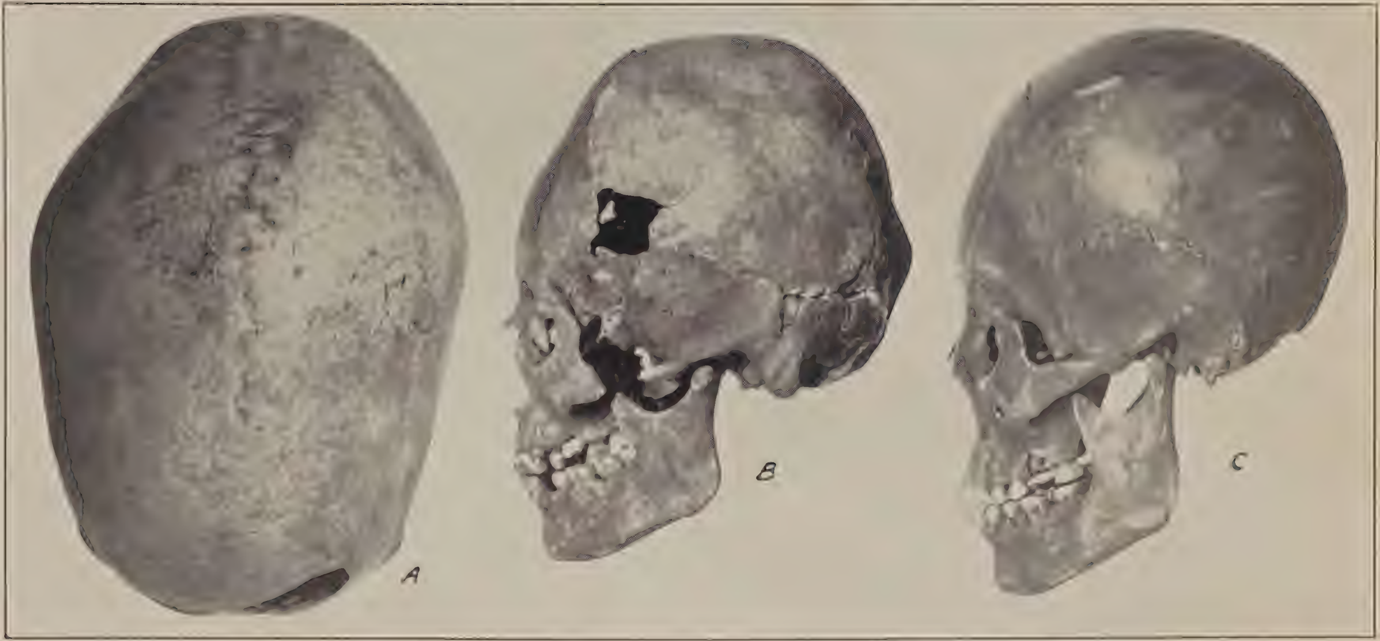
b. Malposed bicuspids, norma basilaris. Site No. 19, Burial No. 5.



a. An asymmetrical skull. Site No. 19, Burial No. 4.



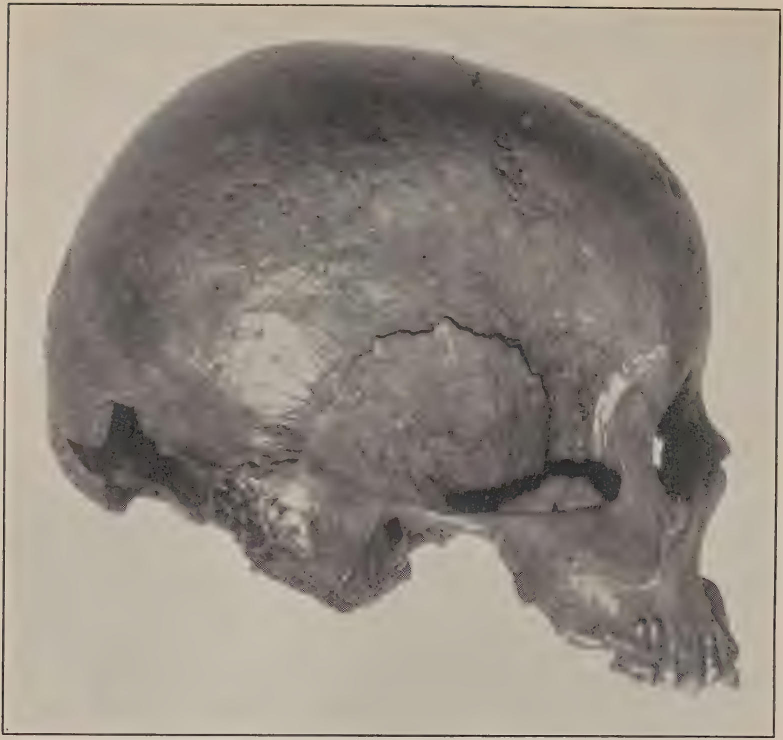
b. Extreme brachycephalism. Site No. 19, Burial No. 21.



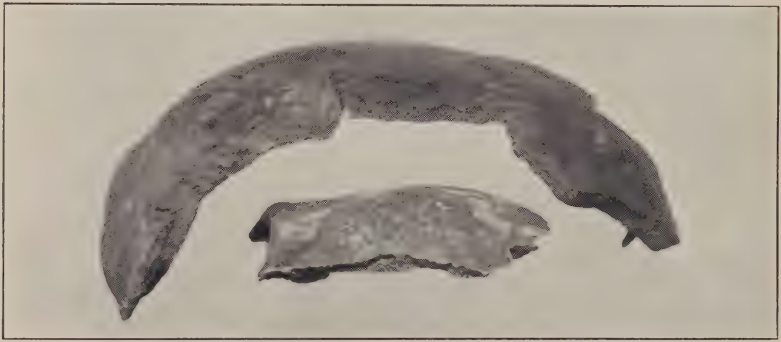
a. A dolichocephalic skull. Site No. 20, Skull No. 13.

b. A case of pyorrhea, norma lateralis. Site No. 19, Burial No. 21.

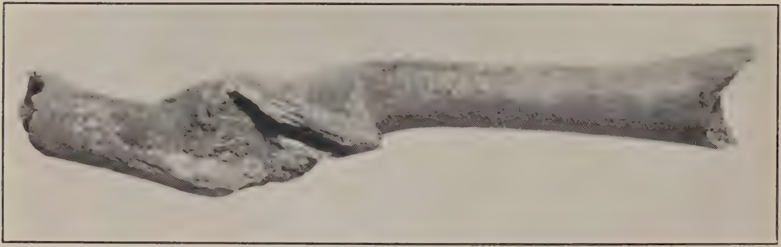
c. Frontal and parietal flattening. Site No. 19, Burial No. 5.



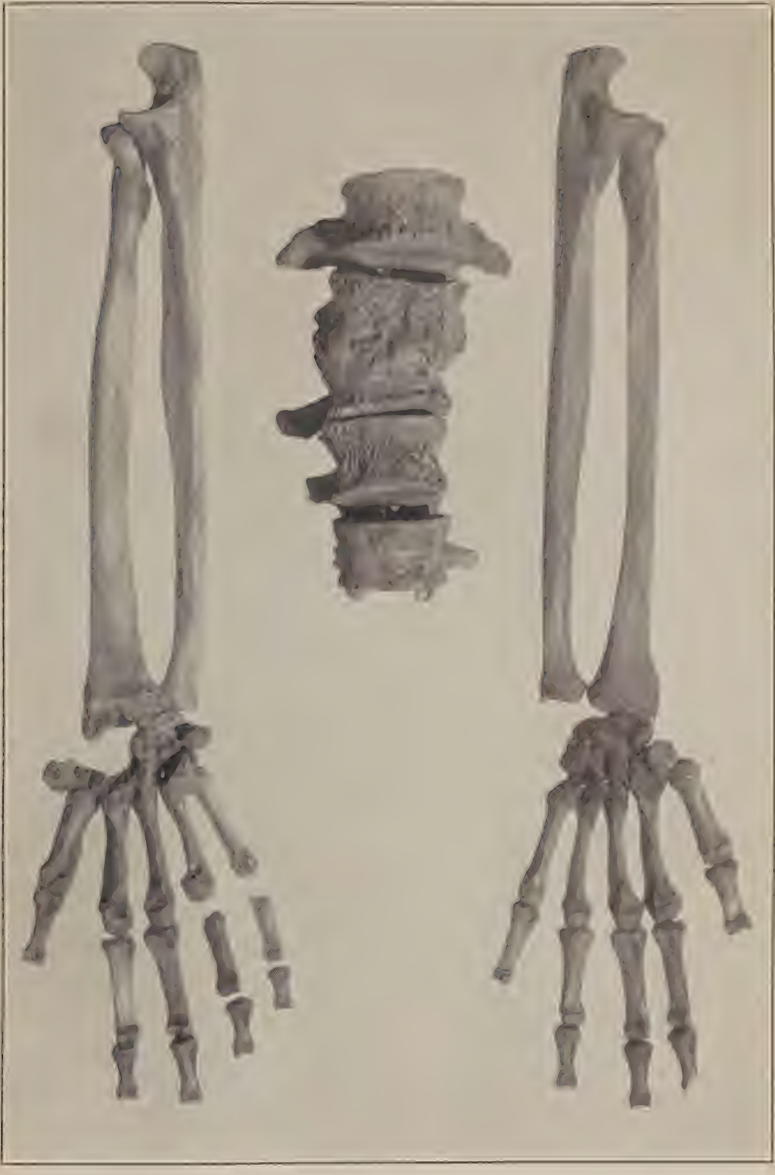
a. A partly burned skull. Site No. 20. Skull No. 14.



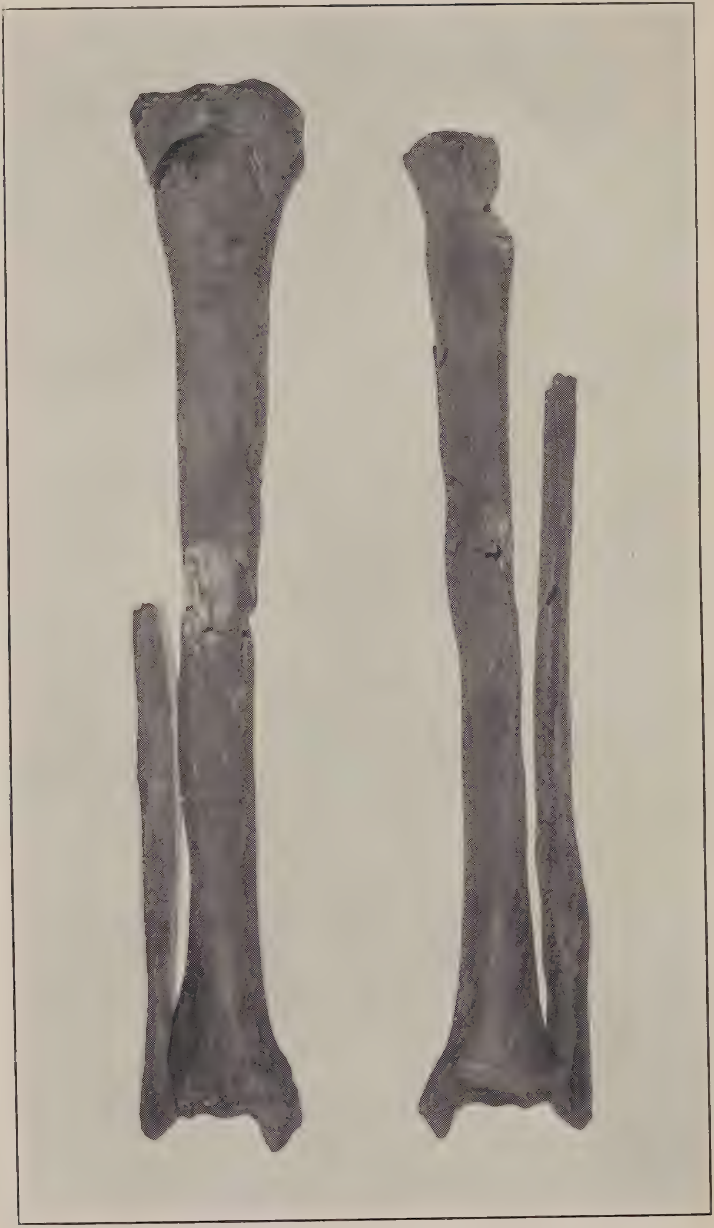
b. Paget's disease of the bone. Site No. 20. Compared with normal skull fragment.



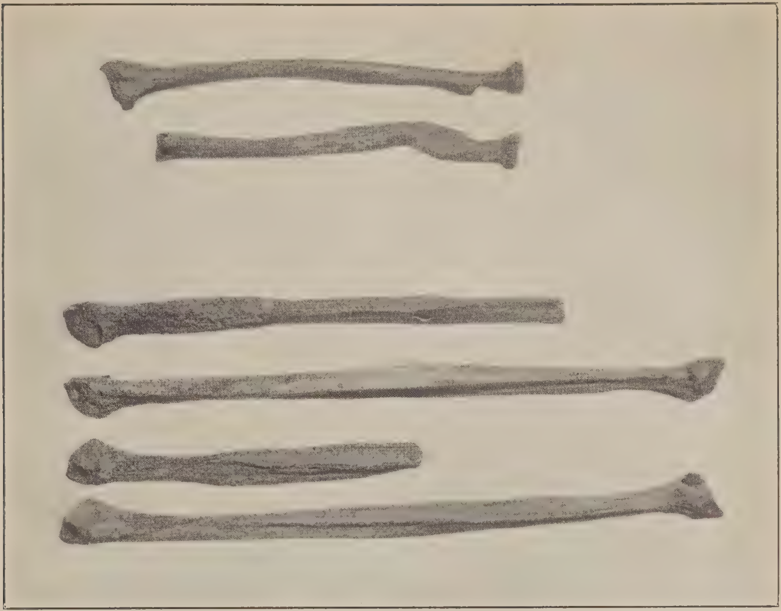
c. Healed fracture with sequestrum cleft. Site No. 22, Burial No. 15.



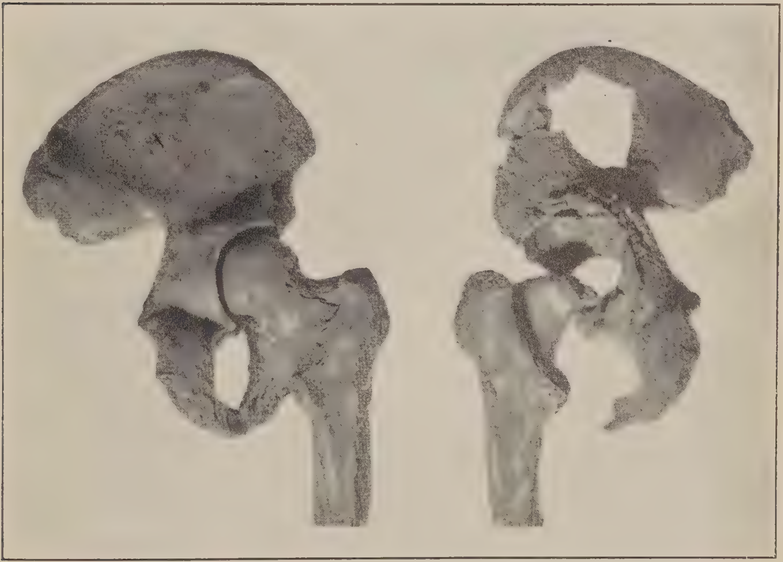
Fused vertebrae and carpals. Site No. 19, Burial No. 4. Normal arm and hand on right.



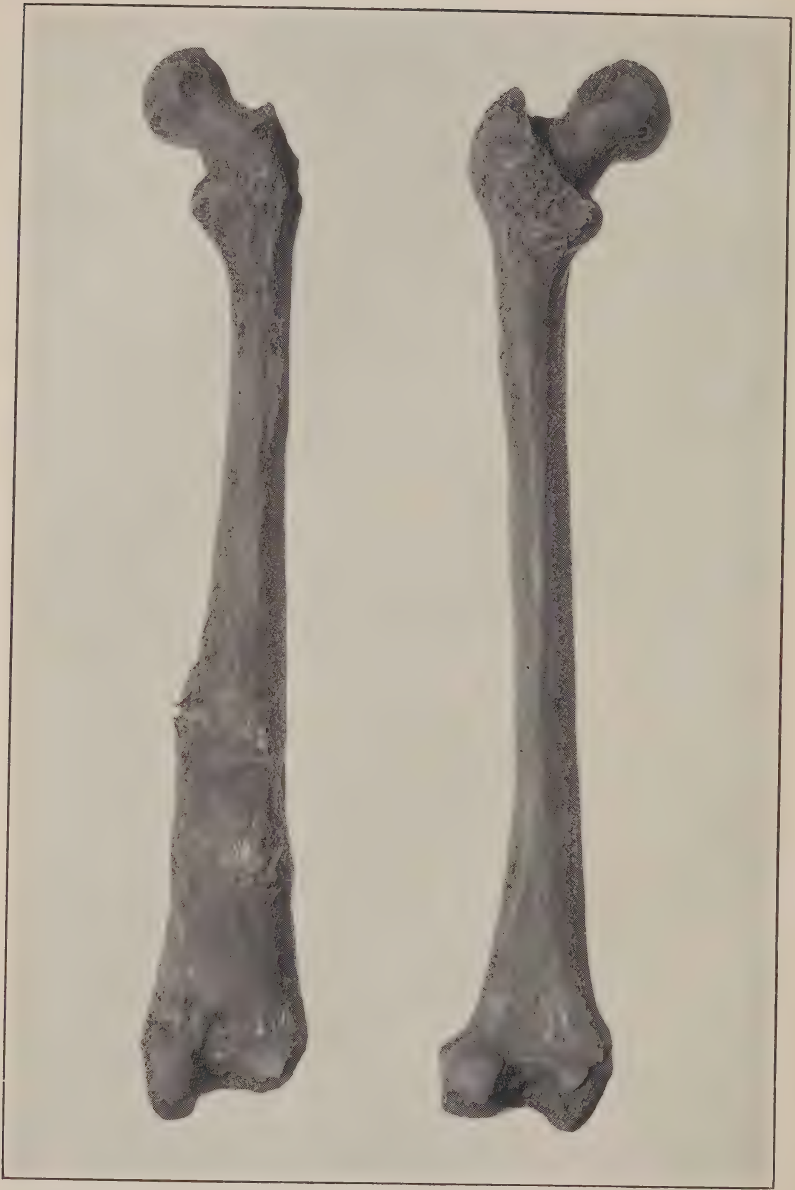
Proliferative periostitis of tibiae and fibulae. Site No. 5, Burial No. 2.



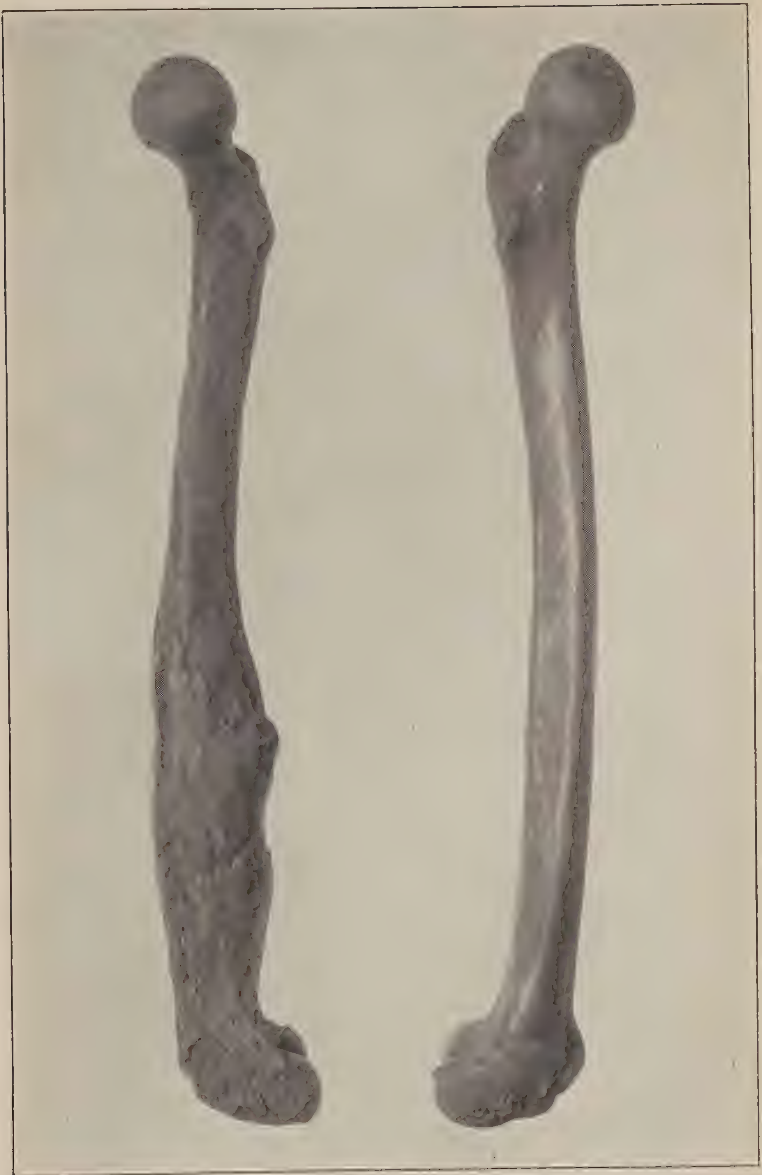
a. Proliferative periostitis of fibulae. Site No. 5, Burial No. 2. Healed fracture of radius. Site No. 19, Burial No. 8.



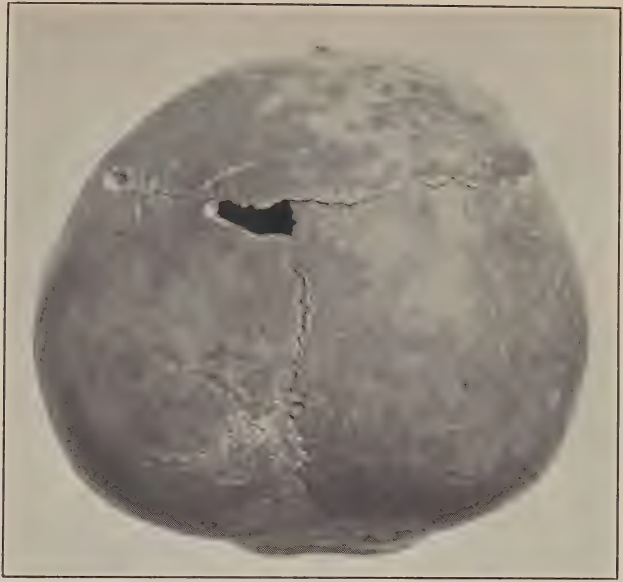
b. Bone destruction in the hip joint. Site No. 19, Burial No. 4. Normal femur and hip on the left.



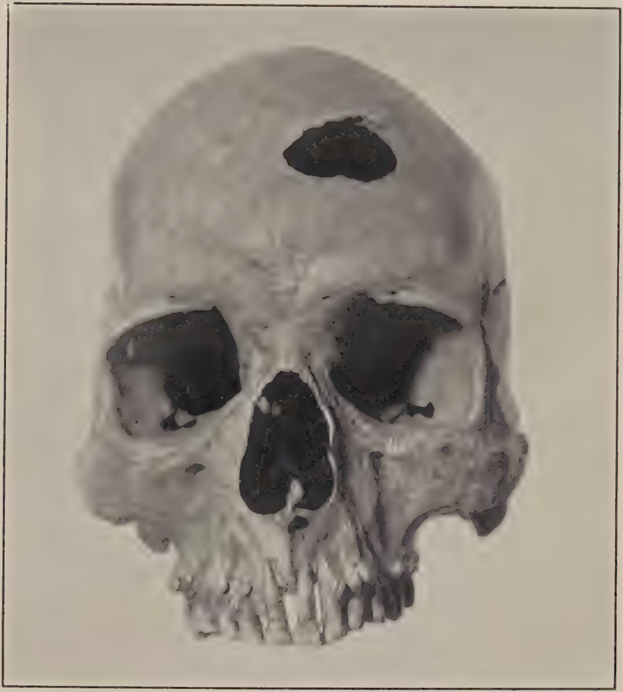
Normal and diseased femora. Site No. 19, Burial No. 14.



Femur with enlarged distal end, lateral view. Site No. 19, Burial No. 14.



a. Norma verticalis of asymmetrical skull. Site No. 19, Burial No. 5.



b. Sclerotic hyperostosis, norma frontalis. Site No. 20, Skull No. 13.

Supernumeraries are occasionally seen, usually in the upper jaw.

Various types of pyorrhea are found. The commonest form appears to be an alveolar periodontoclasia usually seen at the bases of the incisors and canines. A case of pyorrhea is shown in plate 139, *b*.

Many of the skulls show impacted third molars, generally in the lower jaw. This fact certainly does not bear out the theory often advanced in modern dentistry that this condition, as well as some other types of dental pathology, is due to modern methods of cooking foods and to the mixing of races. Certainly the aboriginal Amerinds did not have modern foods nor modern methods of cooking, and the mixing of races, at least from the standpoint of the ethnological classification of races, had not taken place.

Three of the skulls from Site No. 19 had malposed bicuspids. The *norma basalis* of one of these skulls, from Burial No. 5 of this site, is shown in plate 137, *b*. This skull also had an abscess penetrating into the sinus on the upper right second molar.

Caries of almost every conceivable size, shape, and condition are common. Often these cavities are associated with pyorrhea pockets, particularly on the upper molars.

Premolars and molars often show serumnal or salivary calculae in which, in addition to the breaking down of the bony edge of the mandible, a considerable calcareous deposit has accumulated in the region of the gum line. One such case, in which the sclerotic hyperostosis is so abundant that it forms great knobs projecting from the edge of the maxilla, is shown in plate 146, *b*. This is a photograph of Skull No. 13 from Site No. 20 and shows in addition to the dental condition the broad and high malar region so characteristic of these skulls and the wide and subrectangular eye sockets.

A rather peculiar tooth condition is observed in the case of the skull of a child reported in Burial 6B from Site No. 15. In this skull the upper incisors show a distinct notching, with distinct perpendicular ridges on the anterior surfaces. This may not be pathological, but is apparently anomalous. This is shown in plate 137, *a*.

THE CERAMIC REMAINS FROM NORRIS BASIN, TENNESSEE

By James B. Griffin

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Introduction

The pottery discussed in this report was obtained from 10 of the sites excavated in the Norris Basin. When the field work was completed in June 1934 a representative series of sherds from these 10 sites was selected and shipped to the Ceramic Repository for study. It was not until the main portion of this report was completed that the writer knew the geographical or cultural relationships of these sites. In other words, the pottery analysis and comparison was conducted without any knowledge of the other material found at the sites.

As has been explained in the main body of the report on the excavation of the Norris Basin sites, a complete examination of none of the valley sites was possible. At some of the places it was only feasible to dig the mound areas and at others only the village site or limited portions of it. Furthermore, the burial grounds, which might have contained considerable ceramic material, were in most instances not discovered. The manner in which the domiciliary mounds were constructed and their long period of cultivation has made it practically impossible to recognize any change in pottery type at any given site. The pottery itself gives no clue that any such shift in ceramic styles occurred at any of the sites discussed except in a few rare instances, and these might better be explained by some other hypothesis.

For the above reasons I have not deemed it advisable to rely very heavily on a statistical comparison of the various pottery types found at the different sites. Had a larger proportion of each site been explored, and if all of the ceramic material had been available for study, such a procedure would have been much more valuable.

In spite of these difficulties, this study of the Norris Basin pottery has been made possible because a representative sample of the total ceramic complex at each site was available. The number of the sherds analyzed from each site and the fact that the sites are from a limited, hitherto relatively unknown, area enables the report to fill a gap in the archaeological history of the southeast. I have entered into considerable detail in order to present a method by which the pottery determinants at a given site can be ascertained, and the various sites compared on the basis of the ceramic complex.

Before the material was laid out for study it was washed and cataloged by sites and according to the location within the site. Due to pressure of other duties and because it was desirable to prepare this report for publication at the earliest possible date, the rim sherds, handles, and other significant pottery fragments were sorted out from the mass of body sherds. All of the rim sherds or other significant sherds from a given site were spread out on a large table, and the various pottery types were grouped together. Since a preliminary study indicated that there were no cultural differences of great import within any of the sites, the pottery from each site was studied as a unit. The basis upon which the division of types was made was simply that those sherds that looked alike were placed together. The characteristics which were most noticeable and valuable in sorting were the type of surface finish and the shape of the rim. The salt pans and bowls are easily recognizable and practically all of the remaining vessels were variants of jars. The rim sherds representing jars were grouped together without regard to size or very minor differences in rim shape.

Following the selection of the types of vessels present at a site, the sherds of each type were arranged on the table, numbered, and a chart was prepared which would show the major characteristics of each sherd. The type of chart utilized enables one to obtain not only the total number of sherds with a certain kind of surface finish and with a certain rim shape, but it also allows correlation of the various characteristics of the sherds. One can readily recognize any significant relationship between the degree of flare of the rim and the shape of the lip, or between the type of surface finish and the hardness. The cross-section drawings and the illustrations of the pottery from the study collection bear the number of the sherd and the number of the chart where the sherd is described. In this way it is possible to obtain a fairly satisfactory idea as to the physical make-up of a good number of the significant sherds.

I have followed the archaeologist's custom of using the word "tempering" to indicate the material consciously added to the clay and water by the potter in order to insure it to some degree against the stress and strain due to drying and firing. Occasionally the word "aplastic" has been used to relieve the monotony of the repetition of the term "tempering." The hardness was calculated according to the method recommended by B. March.[1] The area tested was usually the outer rim. My opinion of the texture of sherds was obtained by an examination of the cross section and comprises the texture of the paste itself and the size and amount of the tempering material. It is to be hoped that a more objective means of determining texture will be available in the future. The shape of the rim was determined by the rim itself and not by the angle at which the rim is attached to the body of the vessel. I have considered the rim to be that portion of the vessel adjacent to the lip and the area modifying the oral aperture. On the bowls and salt pans it would be difficult to identify the rim if the lip were not present. On the majority of the jars a clearly defined neck was not present and the rim has usually been considered to be that portion of the vessel above the maximum constriction of the body. The lip has been considered as the area marking the meeting place of the inner and outer surfaces of the vessel. A rounded lip is one which is gently rounded with no perceptible lessening of the width of the rim as the lip is approached. When the width of the lip was noticeably less than that of the rim, but was rounded, the lip was spoken of as being narrowed and rounded. A noticeable flattening of the lip surface without sharp edges is called flattened and rounded.

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[1] March, B., Standards of Pottery Description, 1934.

I am indebted to Professor Webb for his never-failing helpfulness and courtesy. I have benefited from the experience and advice of Mr. Horace Miner of the Department of Anthropology of the University of Chicago, and Mr. Volney H. Jones, of this museum, in my study of the textile fabrics represented on the salt pans. I have followed Mr. Miner's classification of weaves as set forth in his master's thesis. I would also like particularly to express my appreciation to Dr. Carl E. Guthe for his suggestions and guidance.

The pottery from the Norris Basin that is now in the Ceramic Repository can be roughly divided into two major divisions. Two of the sites can immediately be set off as distinct from the rest. These two sites are listed as *caves* and the pottery from them could not be confused with that coming from the sites located in the *valley flats*.

While the pottery complexes from these two sites are similar they are not identical. There are a number of characteristics that they have in common but there are also differences which may be more significant when more material of the same general character is subjected to this type of analysis. I shall deal with each site separately, then discuss them together, and finally compare this pottery with analogous finds.

SITE NO. 3

There are 155 sherds from Site No. 3. They are divided into four major groups, the division being primarily based on differences in surface finish. There were very few rim sherds present, and for that reason the analysis had to be based on body sherds. The tempering material in every case was grit or crushed rock. In the majority of the sherds this consisted of limestone. Upon examining the limestone pieces in the pottery it was noticed that in some sherds very small shells were present and these shells were tentatively identified by Dr. G. M. Ehlers[2] as being *Zygospira* sp. (?) from Ordovician limestone. Other rocks that were broken up to be used as tempering material were slates and crystalline rocks.

The first type at this site is tooled or malleated on the exterior surface with a cord-wrapped paddle. See Chart I and plate 13, *a*, the sherd in the upper right-hand corner. This group has the highest percentage of grit material other than limestone, as only 6 out of 21 sherds have limestone used as tempering material. The surface hardness ranges from 2 to 4, with the majority of the sherds having a hardness of 2.5. The texture of this group is predominantly medium to medium coarse. Approximately one-third of the volume of the paste is made up of the tempering material. Discoloration of the exterior or interior surfaces occurs on about one-third of the sherds. The predominant exterior colors are brownish gray, gray, and grayish tan. It is very difficult to accurately identify the predominant color of a group of sherds, or even of one sherd, when there is such a great variation as appears on the pottery of eastern United States. However, an approximation can be given. On many of the sherds there is a noticeable line of demarcation between the less completely fired interior paste and the outer and inner surfaces.

The distinguishing character of this group is the cord-wrapped paddling on the exterior surface. These markings are usually parallel to each other and usually at right angles to the lip of the vessel. On vessels of this type the markings become less perpendicular as the base is approached. In that area there is apt to be considerable cross stroking and consequently a lack of definiteness in many of the impressions. The cords all appear to be of the close-rope variety and are close together. There is little or no evidence of smoothing subsequent to the malleating.

There are only three small rim pieces belonging to this type in the Ceramic Repository. They are straight and have the cord-wrapped paddling continuing up to the lip. One of these has cord markings on the lip but none of the sherds have cord markings on the interior surface. The lips are somewhat flattened and slightly narrower than the rim immediately below the lip. The interior surfaces have been smoothed and usually very fine parallel, horizontal striations can be seen.

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[2] Curator of Paleozoic Invertebrates, Museum of Paleontology, University of Michigan.

The thickness of the body pieces ranges from 0.5 cm to 1.1 cm, with the usual width being 0.6 cm to 0.8 cm. Sherd No. 3 on Chart I belonged to a vessel with an estimated diameter of 8 inches at the lip.

The second distinct group at Site No. 3 bears the impression on the outer surface of a paddle which had been carved into small squares or rectangles. This was the largest single type of Site No. 3 which offers a strong contrast to the scarcity of the same type at Site No. 12. The analysis of this group is given in Chart II and representative sherds are illustrated in plate 13, *a* (the sherd in the upper left-hand corner, sherds 3 and 4 in the second row, 1 and 3 in the third row, and the first sherd in the bottom row).

By far the majority of the sherds in this group were of limestone temper; only 7 out of 55 contained other types of grit. The texture is not as coarse as in Type I. The individual pieces of temper are usually smaller and a higher percentage of the volume of the paste (in some sherds at least 50 percent) consists of the added aplastic. The sherds range in hardness from 2–2.5 to 4, and while the majority are 2.5 there are 22 above that mark, and of these 9 have a hardness of 3. The color of the exterior surfaces is usually one or more varieties of neutral grays and browns. There was pronounced smoke blackening on 38, or almost 70 percent of the interior surfaces of the sherds, while the same kind of discoloration occurred on only eight of the exterior surfaces. The paste between the exterior and interior walls is almost black in color and offers a strong contrast to some of the exterior surfaces, having a light tan color.

The size of the squares or rectangles impressed into the surface vary not only from sherd to sherd, but even the same sherd will have impressions of different size. This, however, would be expected, since it would be almost impossible to carve a wooden paddle so that all of the squares would be exactly alike. They vary in size from 0.3 cm to 0.5 cm square, or 0.25 cm by 0.35 cm to 0.5 by 1.1 cm rectangle. The most common size square is 0.35 cm., and the most common rectangle 0.4 cm by 0.7 cm. The exterior surfaces appear to have been smoothed before the application of the grilled paddle. These surfaces are not now as distinct as they once were, but I am unable to decide whether this is due to smoothing before firing, to actual use, or to immersion in the soil. The interior surfaces are smoothed but have a rougher finish than is present on the exterior, and there also are more tempering particles that can be seen on the interior surface. The sherds range in thickness from 0.4 cm to 0.9 cm, with the most common thickness being between 0.5 cm and 0.7 cm. As a group they are thinner than Type I. Figure 73 is a reconstruction of the probable shape of this type of vessel. Sherd No. 20 on Chart II has an estimated diameter at the lip of 10 inches and Sherd No. 45 on the same chart has an estimated diameter of 8.5 inches at the base of the rim.

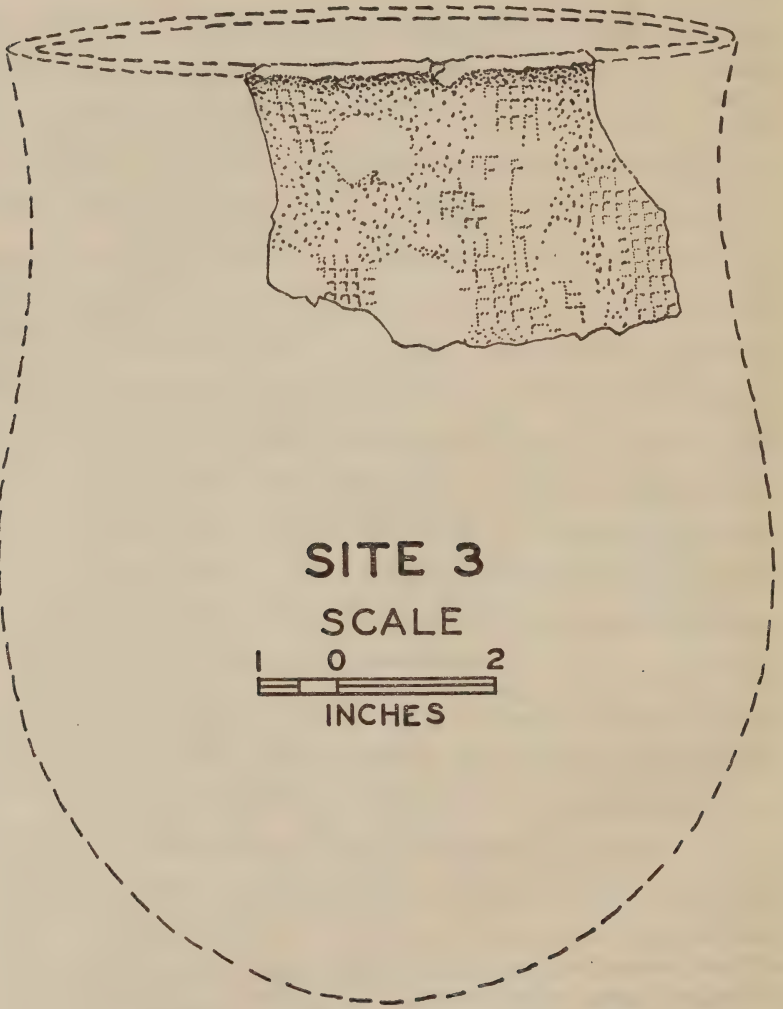

FIGURE 73.—Restoration of stamped pottery vessel.

The distinguishing characteristic of the third group is the textile impression on the outer surface. Two-thirds of the sherds have limestone temper. The majority of the sherds with fine grit temper, or with grit temper other than limestone, are of the wide-warp variety. The texture of the sherds is about equally divided between medium and medium coarse, with only three being coarse. Those sherds that have the fine texture are also distinct because of their wider warp and coarse gritty surface. The hardness of the sherds varies from 2–2.5 to 4. Over 60 percent of the sherds have a hardness of 2.5, while 35 percent are above that figure. As a group they are not quite as hard as Type II but harder than Type I. The interior surfaces show smoke discoloration on a little more than half of the sherds, while the exterior is blackened on only one-fourth of the pieces. The surface colors range from black through neutral grays to grayish tans and a reddish brown. This latter color occurs on the first four sherds.

While the textile impression on all of these sherds is of the same general type, some of them, notably the first eight in Chart III, typical examples of which are shown in plate 13, *a*, row 2, No. 1, and row 4, No. 3, have a wider warp than is present in the other pieces. The majority, however, have the appearance of those shown in plate 13, *a*, row 2, No. 5, and row 4, No. 2. The impressions on most of the sherds in the Ceramic Repository have been somewhat smoothed so that it has been difficult to get a clear positive of the fabric which made the impressions. The type of basketry that is represented on these sherds seems to be plain plaited weaving, with a close weft. In most of the sherds the warp threads are completely hidden and in none of them can the exact character of the warp be determined. The warp varies from 0.8 cm to 1 cm in width, with five warp strands being 4 cm in width in the best example. On the same sherd five weft threads were 2 cm in width. The finer impressions have a measurement of 2.1 cm for five warp threads and but 0.7 cm for five weft threads.

The sherds range in thickness from 0.5 cm to 1.3 cm, with the majority of the sherds being between 0.6 and 0.9 cm.

The sherds making up the last group, Chart IV, were in the main those that did not rather obviously fall within the first three. They consist of three sherds with a striated surface as though they had been brushed (see the lower right-hand corner of pl. 13, *a*) and the rest have fairly smooth surfaces. In a number of cases it was possible to identify the type of surface finish before the sherd had become smoothed. Hardness again ranges from 2–2.5 to 4, with a little over 50 percent of the sherds having a hardness of 2.5 and about 30 percent having a hardness of 2–2.5. Only 4 out of the 39 sherds had other than limestone temper. The texture was predominantly medium with the next largest group being medium coarse. In most of the sherds the amount of temper and clay is about equal. Twenty-three of the sherds have smoke-blackened interiors and 10 have the same discoloration on the exterior. The exterior surface coloration on this group corresponds to that noted for the first three groups.

As will be noted in Chart IV, the first six sherds are rim sherds with the lip present. Four of the lips are either flattened or slightly flattened. One of the lips has distinct remains of the grilled paddle on its surface. The rims are only very slightly flared. Because this group included both rim sherds and basal portions it has the greatest range in thickness. Some of the rim sherds are only 0.3 cm thick at the lip while one of the basal portions is 1.5 cm thick. Most of the sherds, however, are between 0.5 cm and 0.8 cm in thickness.

The two basal portions in the Ceramic Repository collection appear to have belonged to vessels with a conoidal base. The basal sherd, plate 13, *a*, row 1, No. 2, has a small foot, probably one of four at the base of the vessel. It should be noted that the surface finish of this sherd was produced by a brushing or combing technique which left the striations that are visible on the sherd.

SITE NO. 12.—WALLACE CAVE

The pottery from this site has a clear resemblance to that from Site No. 3. A detailed examination, however, shows that there are some important differences. The sherds have been divided into four groups primarily on the basis of differences in the treatment of the exterior surface. The first group is almost identical with Type I of Site No. 3 as far as the surface treatment is concerned. The grit temper is predominantly limestone and the texture ranges from medium fine to coarse, with the majority of sherds having medium texture. The percentage of sherds having medium coarse to coarse texture is, however, higher in this group than in any group at the two sites. Probably half of the volume of the completed vessel is made up of tempering material. This group is softer than the corresponding group from Site No. 3, as 93 percent of the sherds have a hardness of either 2–2.5 or 2.5, even though it rates as the hardest type at this site.

Seventeen of the 28 sherds have smoke-blackened interiors and 10 of the exterior surfaces are discolored from the same cause. The predominant surface color is a dark smoky gray, with a few sherds having a grayish tan surface color. The paste is a dark bluish gray. The surface has been malleated with a cord-wrapped paddle. Examples from this site are shown in plate 83, *a*, row 1, No. 3, and also the sherd in the lower left-hand corner. The cord impressions on most of the sherds are clear and distinct and have not been subjected to any smoothing. Two of the sherds have occasional cord impressions on the interior surface but the majority have been roughly smoothed, with occasional fine horizontal striations bearing witness to the smoothing process. This group is thicker than any of the other groups at the two sites except Type II at this site. The range is from 0.7 cm to 1.4 cm, with the usual thickness being between 0.8 cm and 1 cm. None of the sherds in this group at the Ceramic Repository have a lip, but the rim sherd photographed appears to be straight and has a rounded and slightly everted lip.

The sherds that were grouped together under Type II at Site No. 12 are quite distinct in regard to their surface treatment from any of the pottery present at Site No. 3. The tempering material is crushed limestone but the proportion of grog to clay is low and the texture of the group is the finest at the two sites. Almost 65 percent of the sherds are of medium fine texture and the remaining 35 percent are all medium. This type is also the softest of any of the ones found at the cave sites, as 94 percent of the sherds can be scratched with the fingernail; in other words, 2–2.5; and the other 6 percent are 2.5. There is less discoloration from smoke blackening than on any other group, as only nine sherds are so blackened on the interior and but one on the exterior.

I have not been able to get a clear impression on plastic clay of the nature of the fabric that was pressed against the vessel while the clay was still soft. It appears to have been made by a weave with a fairly close warp and was pressed against the pot a number of times and from different angles. The softness of this group has further interfered with securing an accurate reproduction of the fabric. The nearest approach to this type of ware that I am cognizant of in the literature is figured on plate 28 of W. H. Claflin's report on the Stallings Island Mound, Columbia County, Georgia.[3] In the final discussion of these two sites I shall devote more space to this and other resemblances between the two groups (pl. 152).

There are three rim sherds bearing lips in this group and all are narrowed and rounded. This accounts for the fact that the thickness ranges from 0.4 cm to 1.4 cm. Many of the sherds are a little over 1 cm in thickness, and this group is the thickest at the two sites. It is possible that all of the 28 sherds may belong to one vessel, but they do not fit together.

The pottery that has been considered as Type III is analogous to the same type at Site No. 3. The grit temper is predominantly limestone with only five sherds having crystalline aplastic. The texture of this group is the coarsest at the site, as 80 percent of the sherds are medium to coarse. There is also a high proportion of tempering material to clay. Eighteen of the interior surfaces and but three of the exterior have been discolored by blackening. The colors range from a light yellowish tan to a smoky gray. Some of the sherds are reddish to chocolate brown.

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[3] Claflin, 1931.

As at Site No. 3, it has been difficult to recover a clear impression of the fabric used to impress the surface of the soft predried vessel. It seems probable that the fabric was a simple plaited weave. One closely woven type, illustrated in the upper left-hand corner of plate 83, *a*, is also represented in the Ceramic Repository. The sherd at hand has a measurement of 4 cm for five warp threads and only 0.8 cm for five weft threads. A more common type, such as the one sherd in the lower row between the basal sherd and grid-marked sherd (pl. 83, *a*) would measure 2.5 or 3 cm for five warp threads and 0.9 cm for five weft threads. The sherds range in thickness from 0.3 cm to 1 cm, with the usual measurement being 0.6 cm to 0.9 cm.

The miscellaneous group of sherds includes stamped pieces, of which there are only three at this site, whereas they occupied a separate group at Site No. 3, with 55 pieces at least of this type of surface treatment. Also included in this group are six sherds with a brushed or combed surface treatment. This type is illustrated (pl. 152) in the photographs of pottery from this site. Most of the sherds whose surfaces had been so smoothed that it was difficult to accurately tell the original surface treatment probably belonged to Type III.

The tempering material is almost altogether limestone, and Sherd No. 28 (Chart IX) contained quite a number of *oölites*, prompting Dr. Ehlers to suggest that the limestone which served as the tempering material was possibly derived from Mississippian oölitic strata. In most of the sherds there is a high percentage of temper. Nine of the sherds in this miscellaneous group had fine texture. Associated with this characteristic was a smooth surface finish and a thinner cross section.

One sherd has a hardness of 2, being the softest sherd at either of the sites. A majority of the sherds have a hardness of 2–2.5 and only five are harder than 2.5. Seventeen of the interior surfaces and 12 of the exterior surfaces are discolored by smoke blackening. The color on the exterior surfaces is similar to that of the material in the other groups at this site and at Site No. 3. The thickness ranges from 0.4 cm to 1.5 cm, with most of the sherds having a width of 0.6 cm to 1 cm.

The first sherd in this miscellaneous group has an atypical shape, as can be seen in the cross section drawing. It has a long sloping shoulder with a straight rim about 2.5 cm high which is recurved outward at almost a 45° angle to the shoulder line. The estimated diameter of the vessel just below the lip is 9 inches.

When the two sites are compared it will be seen at once that the pottery belongs to the same general group. All of the sherds are grit tempered, with Site No. 12 having a higher percentage of limestone temper than does Site No. 3. There is a suggestion offered by the few fossils found in the limestone that this form of grit probably was obtained from rocks of different geological strata. The sherds from Site No. 3 are harder and have a coarser texture than the ones at Site No. 12. Both sites have a good percentage of sherds with cord-wrapped paddling and with impressions of a textile made by a simple weave. One of the significant differences between the sites is that Site No. 12 has only three sherds with the grid squares stamped on the surface, while 45 percent of the sherds at Site No. 3 have that type of surface treatment. But if Site No. 12 has few stamped sherds it has a type of paddled fabric impression, Type II at that site, that is foreign to Site No. 3.

Pottery that has been malleated with a cord-wrapped paddle is very common in eastern United States and its use does not seem particularly significant at present as a minor culture determinant. Some of the sherds that I have grouped under this heading may have obtained their surface finish from a grass-wrapped paddle. The majority of the sherds, however, even though all of the impressions might not be distinct, showed the twist of a cord in some of the depressions. If a cord-wrapped paddle is pulled across the plastic surface of an unfired vessel instead of being rolled, it is impossible to say with much certainty that the impression was made with cord or grass. It has also been quite difficult to arrive at a definite conclusion as to the exact nature of the weave represented on the sherds grouped under Type III. The writer now leans to the opinion that the majority of these impressions were made by plain plaiting of the "close" or "tapestry woven" variety. It is also possible that the fabrics were made by plain twining, with a close weft over a wide warp, but the twining of the weft elements was not discernible. It is also possible that some of the impressions may have been made by a small stick around which a cord had been closely wound. This latter explanation, however, I view as the least likely for the majority of the sherds of Type III.

The resemblance between Type II at Site No. 12 and pottery found at the Stallings Island Mound has already been mentioned. Types also present at Stallings that are found at the two cave sites under discussion are the grilled, stamped ware,[4] the impression of a fabric with simple plaited weave,[5] the brushed or combed surface treatment,[6] and the small feet at one of the four corners of a pottery base.[7]

While these pottery types were associated with shell-tempered wares at Stallings Island, a number of village sites south of Augusta along the Savannah River yielded a similar complex to that found at our two cave sites. At Silver Bluffs,[8] Claflin found the grilled stamp pattern, the textile design, sherds with the brushed or combed surface, and basal portions with the small conical, teat-like foot at the corners. These same patterns were also present at the New Savannah site.[9] Grit temper is characteristic of these sherds in Georgia as well as in the sites under discussion in Tennessee.

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[4] Claflin, 1931, pl. 26, nos. 1 and 2.

[5] Claflin, 1931, pl. 27, nos. 1 and 2.

[6] Claflin, 1931, pl. 32, nos. 1, 2, and 8.

[7] Claflin, 1931, pl. 33.

W. H. Holmes in his early work on prehistoric textiles has a drawing of the textile design on a sherd from Carter County, Tenn.[10] This county is in the northeast corner of the State. The textile is described as being of the plain-twine type with a close weft and wide hidden warp. Probably due to my unfamiliarity with the textile field, I can not make up my mind whether impressions made by similar weaves were of this plain-twine type or simple plaiting with a hidden warp. Certainly the twist of the weft elements is not shown in Holmes' reconstruction of the textile and it is not discernible in the positives from the pottery obtained from these cave sites. When M. R. Harrington sought to compare some of the pottery found with his Round Grave people he also referred to the illustration of Holmes cited above. His sherds, particularly *b*, *d*, and *e*, of Plate XLVII, are very similar to those found in our cave sites and described as Type III.[11] After making impressions of these sherds, Harrington concluded, "it was seen that the marks are the imprints of a stiff fabric consisting of a warp of rushes and a weft of twisted fiber cords".[12] Harrington's excavations were in Loudon County, which is south of Knoxville on the Tennessee River. The tempering material of these sherds was predominantly shell. It should be noted, however, that if the other types present at our cave sites were also present in the remains of the Round Grave people, Harrington makes no mention of them. The probabilities are that more than one of our types was present at the sites that Harrington links with the eastern Algonquian groups. In the same publication a small sherd is illustrated with the grilled-stamp design.[13] It is grouped with the "Cherokee" potsherds from Hiwassee Island, near Dayton, Tenn.

Excavations at the Nacoochee mound in White County, northeastern Georgia, yielded two of our types in association with a considerable amount of other types of pottery.[14] The types present at this site are the grilled-stamp impression and the brushed surface. See plate XX, fig. 1; plates XXXVI and XXXVII. It is interesting to note that Etowah also has an example of the grilled stamp design.[15]

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[8] Claflin, 1931, p. 20.
[9] Chaflin, 1931, p. 20.
[10] Holmes, 1884, p. 410.
[11] Harrington, 1922.
[12] Op. cit., p. 155.
[13] Op. cit., p. 180.
[14] Heye, Hodge, and Pepper, 1918.

Vessels with a surface finish resulting from the application of a paddle with carved squares are found sparingly at Fox farm[16][17] and Madisonville.[18] Those are, however, the only two Fort Ancient sites at which this design occurs and the other characteristics of the vessels on which it appears are quite distinct from those of the Norris Basin sites.

In Greene County, Ind., at the Huntingdon site, Black[19] found one sherd which had small squares imprinted on the outer surface. The squares measured 0.5 cm. This site can be attributed to the Woodland culture in the north. Wintemberg, in speaking of the distinguishing characteristics generally credited to Algonquian peoples in Canada, says: "Other surface markings were made with a paddle with a chequered surface."[20] The Parmelee rock shelter in Wayne County, Ky., excavated by the Museum of Anthropology of the University of Michigan, contained a few sherds with this same stamp design. Other sherds from this site have a surface finish that was obtained from the same type of weave that characterizes Type III.

As a matter of fact, most of the grit-tempered pottery from the caves and rock shelters of eastern Kentucky can be included in the same general pottery classification with the Norris Basin cave sites.[21]

I have called attention to the presence of pottery with fabric impressions resembling Type III in association with the Round Grave people and at the Stallings Island Mound. In Holmes' discussion of the pottery of eastern United States he illustrates sherds belonging to his Middle Atlantic province that are similar to Type III. This is particularly clear in the case of sherds *d* and *e*, on plate CXL, that came from a site near the junction of the Anacostia and Potomac Rivers.[22] A number of sherds in the Ceramic Repository, from the Levanna site,[23] in New York, appear to have the impression of a simple twine or plaited weave upon their outer surfaces. W. J. Wintemberg, in his report on the excavation of a shell heap in Nova Scotia, pictures two sherds, Nos. 4 and 6 on plate XXVI,[24] that he considers as having been decorated by a cord-wound stick, but which appear to me to have been impressed with a fabric similar to Type III.

Probably the closest relationship to the type of pottery found at

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[15] Ashley, 1932.
[16] Smith, 1910, Plate XXV.
[17] Ceramic Repository collections.
[18] Ceramic Repository collections.
[19] Black, 1933, p. 300.
[20] Wintemberg, 1931, p. 82.
[21] Funkhouser and Webb, 1929 and 1930.
[22] Holmes, 1903.
[23] Ritchie, 1928.
[24] Wintemberg, 1929.

Sites Nos. 3 and 12 will be found in the general area in which they are located. A collection of sherds from Lauderdale, Limestone, Morgan, and Colbert Counties along the Tennessee River in northern Alabama, that were obtained by Tennessee Valley Authority workers in 1933–34, will undoubtedly have many close analogies to the pottery from the cave sites in the Norris Basin. The northern relationships seem to be with sites that are grouped under the roughly synonymous and perhaps misleading terms, "Woodland" and "Algonquian."

Comparative Chart for Pottery at Sites Nos. 3 and 12

	Site No. 3	Site No. 12
Temper:		
Limestone	Abundant	Abundant.
Other forms of grit	do	Rare.
Texture:		
Fine	Absent	Do.
Medium fine	Rare	Medium.
Medium	Abundant	Abundant.
Medium coarse	do	Medium.
Coarse	Rare	Rare.
Hardness:		
2	Absent	Do.
2–2.5 to 3	Abundant	Abundant.
3 to 4	Medium	Rare.
Surface finish:		
Cord-wrapped paddle	do	Medium.
Double fabric impression	Absent	Do.
Simple plait or twine weave	Medium	Do.
Brushed surfaces	Rare	Rare.
Smoothed	Medium	Medium.
Grilled-stamp impression	Abundant	Rare.
Shape of rim:		
Straight	×[1]	×.
Slight incurve	×	×.
Slight flare	×	×.
Shape of lip:		
Rounded	×	×.
Flattened and rounded	×	×.
Narrowed and rounded	×	×.

[1] × indicates that the trait occurs only on a few sherds.

Site No. 11.—Salt Pans

There are a considerable number of salt-pan sherds from Site No. 11. These sherds were grouped into two main divisions—rim sherds and body sherds. Eighty of the rim sherds showed impressions produced by textiles while only eight had been smoothed. The imprints on five of the rim sherds were so indefinite and the sherds so small that no conclusions could be drawn as to their position within the salt-pan group. There are 64 body sherds readily identified as belonging to the salt-pan group because of their typical textile patterns.

In the analysis of this ware most of the attention was devoted to the rim sherds bearing textile impressions.

Two minor subdivisions were made in this large group on the basis of the relation between the application of the textile and the rim and lip treatment. It was found that on half of the sherds the lip was quite wide and that the textile extended up the side of the vessel to the lip (Chart XI). The other half of this group has a smoothed outer rim and the lip does not reach the thickness common in the first (Chart XII). The first group of 40 sherds is somewhat coarser and somewhat harder than group B. The hardness range is only from 2 to 2.5 and 82 percent of the sherds have a hardness of 2–2.5; i. e., they can be scratched with the fingernail but not with gypsum. The texture is either medium or medium fine. The texture of the salt pans as a group is the coarsest at this site. The color of the sherds is usually grayish tan or grayish brown. A few of the sherds are reddish brown. The interior surfaces are a lighter color as they do not have as much gray. There is little evidence of smoke discoloration on these sherds. This might infer that if these vessels were used as evaporators for salt it was not done over a fire.

The exterior surface of this ware in most cases is obscured by the textile impression. The sherds classed as group B have a smoothed upper rim. The interior surface in almost every case has been smoothed and the narrow horizontal striations bespeak a smoothing stone, shell, or stick. Only rarely do very fine parallel striations occur such as might be caused by the fingers. The few specimens of salt-pan ware that do not have the textile impression have interior surfaces that are much more smoothed than are the exterior.

The textile or fabric impressions on the outside of the salt pan constitute one of the hall marks of this type of ware. By far the most common weave is the plain twine weave. In my discussion of the various types of weaves I shall consider the passive element as the warp and the active element as the weft. In the large salt pan illustrated in plate 80, *a*, the closely spaced lines represent the warp elements while the weft threads caused the impressions of the wider-spaced lines. This sherd also illustrates the most prevalent type of weaving found at this site. In this weave the two active weft elements alternately twine over and under each succeeding warp thread. The warp and weft threads are perpendicular to each other and usually result in a rectangular mesh. The size of the rectangle varies with the spacing of the warp and weft. The width of five warp and five weft threads is given in Charts XI and XII. I do not believe that there are any significant differences in the size of the rectangles as recorded in the two charts. On Chart XI it will be seen that only four sherds could definitely be identified as having a weave other than the plain twining. This second type I am calling twilled twining. As in the plain twining the weft threads are twined but include two warp threads instead of one. The next pair of weft threads entwines the second of the first warp pair and another, or the third warp strand. The first pair of weft threads would then encircle warp threads 1 and 2, 3 and 4, 5 and 6. This same pair would cross each other between warp threads 2 and 3 and 4 and 5. The second pair of weft threads would encircle warp threads 2 and 3, 4 and 5, and 6 and 7. They would cross each other between warp threads 1 and 2, 3 and 4, and 5 and 6. If the weft threads were then pulled tightly together, the first pair would pull one set of warp threads together while the next set of weft threads would pull another set of warp threads together. This would produce a zigzag mesh.

Chart XII has a number of sherds that carry impressions that are difficult to decipher. Sherd No. 16 appears to have two such weaves. One of these appears to be a plain twined weave with a close weft and a wide invisible warp. Sherds Nos. 18 and 26 also bear this weave. The second type on Sherd No. 16 appears to be a variation of the twilled twine weave with a hidden warp and the weft pulled close together (pl. 80, *b*). This second type also appears on Sherds Nos. 17, 22, 26, and 32.

The fabric impressions on the body sherds are also predominantly the plain twine with a rectangular mesh. Two of the body sherds can be definitely identified as having twilled twining, while Sherd No. 14 appears to be of the same type as the twilled-twine variation on Sherd No. 16 (Chart XII).

As can be seen from the figure illustrating the large salt-pan sherd, the shape of these vessels at this site appears to have been that of a large shallow platter. It is 22 inches in diameter and about 6 inches deep. The rims have a slight curve and are much thicker at the lip than at the rim or body portion (fig. 74). The sherds described in Chart XI have a lip thickness which ranges from 0.7 cm to 3 cm, with 80 percent falling between 1.5 cm and 2.5 cm. Those salt pans on which the fabric impression was placed a short distance below the lip (Sherd No. 1, pl. 148, *a*) have a lip thickness which ranges from 0.4 cm to 1.6 cm, with 82 percent having a width of 0.8 cm to 1.5 cm. In contrast to the difference in lip dimensions, the rim and body thicknesses of the two salt-pan groups are more nearly the same. The first group ranges from 0.5 cm to 1.4 cm, with 82 percent falling between 0.7 cm and 1.1 cm. The second group of salt pans ranges from 0.5 cm to 1.3 cm, with almost 28 percent having a width of only 0.5 cm and with almost 90 percent being less than 1.1 cm in thickness.

The estimated lip diameters for some of the sherds described on Chart XI are: No. 1, 22 inches; No. 7, 18 inches; No. 22, 20 inches;

and No. 25, 24 inches. The diameters for various sherds on Chart XII are: No. 10, 19 inches; No. 13, 17 inches; No. 15, 26 inches; No. 32, 22 inches; and No. 37, 20 inches.

There are 14 rim sherds that are not included in the 80 which were given detailed treatment because they did not have textile impressions. In their other characteristics these fragments are perfectly typical salt pans. A sherd of this type is illustrated as the second sherd in plate 148, *a*. The twilled twining with a zigzag mesh is shown in plate 78, *b*, Sherds No. 1 and No. 2 in the first row and Sherd No. 2 in the second row. Sherd No. 16 of Chart XII is the

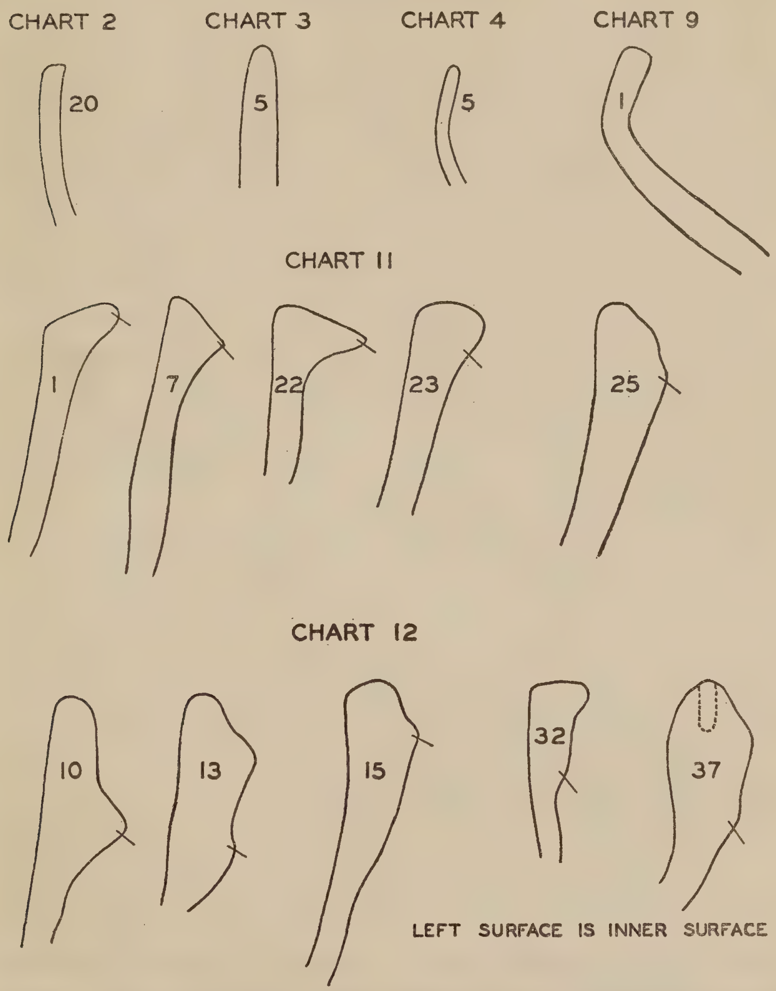


CHART 2
20
CHART 3
5
CHART 4
5
CHART 9
1
CHART 11
1
7
22
23
25
CHART 12
10
13
15
32
37
LEFT SURFACE IS INNER SURFACE

FIGURE 74.—Rim-sherd sections, Charts Nos. 2, 3, 4, 9, 11, 12. The shape of the rims in Charts 11 and 12 should be at about a 30° angle.

first one on plate 148, *a*, and clearly reveals the two types of weaves present on its exterior surface. Other sherds having impressions of the closely woven twilled twining are the third specimen on plate 148, *a*, and the last sherd on plate 78, *b*.

Pointed-Rim Sherds

This easily identifiable and distinctive type of rim is represented by only 17 specimens in the collection at the Ceramic Repository. They are rather soft, as will be seen by glancing at Chart XIII. The texture is medium fine with but two exceptions, and the surface finish about the rim was produced by first tooling the entire outer body with a cord-wrapped paddle and then roughly smoothing the rim. The body was tooled on the majority of the vessels and was not usually smoothed. The rim shape is either straight or slightly flaring, and the lip shape is either round or narrowed and rounded. About half of the pieces show the effects of smoke blackening on the outer or inner surface. The surface color varies from light tan to dark gray. The paste is gray with the exception of one sherd that is reddish brown. The lip thickness ranges from 0.3 cm to 0.9 cm, the rim thickness from 0.4 cm to 1.2 cm, and the shoulder from 0.4 cm to 1.1 cm. The rim is usually a bit thicker than the lip, while the shoulder is thinner than the rim.

None of the sherds pictured as representing this group at Site No. 11 have handles (pl. 76, *b*), but two of the sherds in the Ceramic Repository collection have broken knobs below the raised point which probably were handles of the loop type. The knobs are either rounded or horizontally elongated. The vertically elongated one (Sherd No. 8, pl. 76, *b*), is atypical, as is the sherd in the lower left-hand corner of the same figure. I do not believe that Sherd No. 9 belongs to the same group as the other sherds pictured, as the shape of the lip, the horizontal lug, and the raised rim are not the same as the other sherds shown. Figure 51 is a reconstruction of a vessel of this type and has two raised points. This was probably not so for all of the vessels represented by the sherds discussed in this group. Many of these jars probably had squared mouths with four raised rim sections, as shown in plate 79, *a*. A few of the sherds have a thickened upper rim strip that in several cases has not been completely smoothed into the rim wall.

Bowls

Bowl-shaped vessels are represented by only 17 sherds in the collection available for study. Of these, 12 could be scratched with the fingernail and 15 had medium fine texture. The surface finish was produced by smoothing away the uneven surface after the bowl had been tooled with a cord-wrapped paddle. The lip shape, as shown by Chart XIV, was almost equally narrowed and rounded; rounded; or flattened and rounded. Lip thickness ranged from 0.35 cm to 1.4 cm, while the rim ranged from 0.5 cm to 1.2 cm. The rim ordinarily was thicker than the lip.

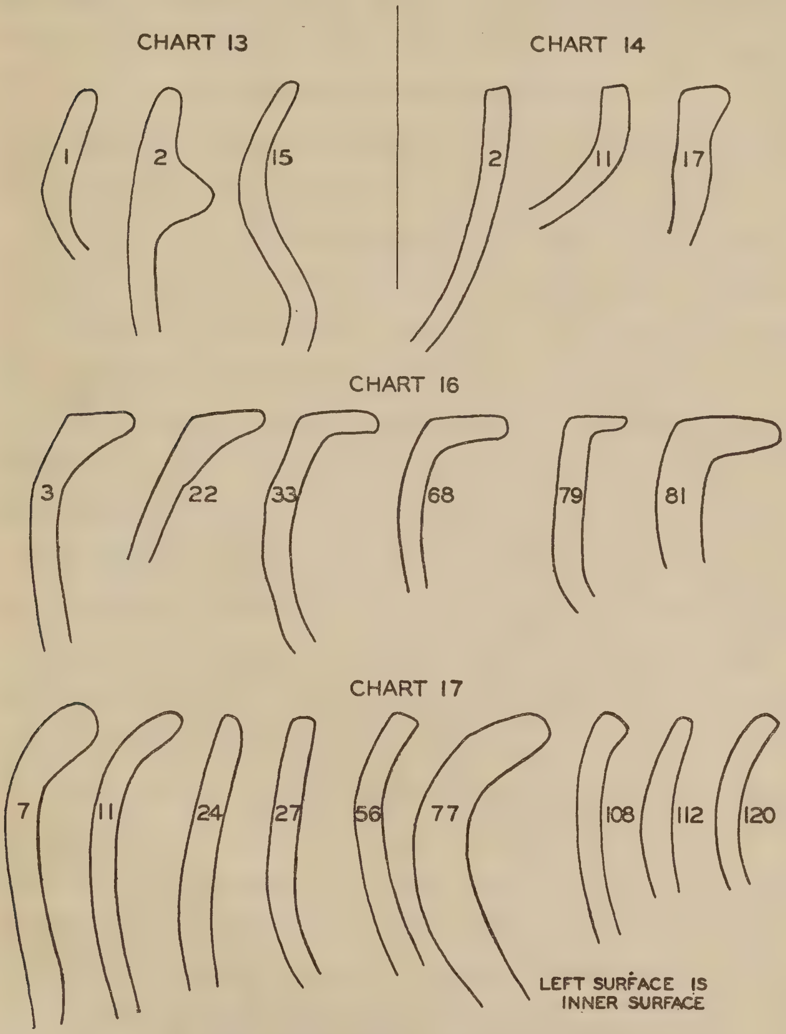


CHART 13
1
2
15
CHART 14
2
11
17
CHART 16
3
22
33
68
79
81
CHART 17
7
11
24
27
56
77
108
112
120
LEFT SURFACE IS INNER SURFACE

Figure 75.—Rim-sherd sections, Charts Nos. 13, 14, 16, 17.

The sherds in the top row of plate 76, *a*, illustrate the ornamentation found on this type of vessel. Sherds Nos. 3, 4, and 5 have an added or thickened upper rim strip which may be coextensive with a lip bearing closely spaced perpendicular notches or incisions. The first two sherds have small, rounded, closely spaced, horizontally projecting nodes. These are either coextensive with the lip or placed immediately below the lip on the rim. Only one sherd that is in the Ceramic Repository collection has a horizontally projecting rim-lip lug.

Wide-Mouth Jars With Rim Bosses

The sherds of this type are characterized by the presence along the rim of a continuous series of closely spaced bosses or nodes which project horizontally from the rim. The variation in shape and appearance of the nodes is well illustrated in the lower two rows of plate 76, *a*. The shape of the vessel was probably that of an open-mouth jar. Twenty-seven out of the 32 sherds of this type which have been examined in detail could be scratched on the outer surface by the fingernail and hence have a hardness of 2–2.5. The texture is medium fine and, as can be seen from the photograph, the surface finish of the rim has been smoothed while the shoulder at least was tooled with a cord-wrapped paddle. Most of the sherds that have smoothed rims were subjected to the tooling up to the lip and the rim was then smoothed. The rim itself is usually straight but is occasionally slightly flaring. The lip is rounded, or narrowed and rounded, in most cases. The exterior surface color is predominantly light gray or a light tan, although darker grays are not atypical. The paste is gray.

The lip ranges from 0.25 cm to 1 cm in thickness, with almost 90 percent being between 0.4 cm and 0.7 cm. The rim ranges from 0.4 cm to 1.2 cm with 85 percent of the specimens having a thickness of 0.6 cm to 0.9 cm. The remaining three columns of measurements on Chart XV give the vertical height of the node strip, the length of three of the nodes, and the width from the tip of the node to the interior surface of the rim. On at least 75 percent of the sherds the height is between 1.5 cm and 2.5 cm; the length of three nodes between 3 cm and 5 cm; and the width between 1.4 cm and 1.8 cm. In the case of a few sherds the clay used to form the nodes had been added as an additional rim strip, but in the majority this could not be seen and the nodes were probably formed directly from the body clay. This decorated area is commonly located 0.5 cm to 1 cm below the lip and is rarely coextensive with it.

Jar-Shape A

The identifying character of this type of jar is a straight or slightly flaring rim, the upper segment of which is rather sharply curved outward so that the lip is practically perpendicular. On most of the exterior surfaces this change in direction of the curve of the rims was brought about gradually, but on the interior surface there is a well-defined break or angle and the upper segment of the interior surface of the rim is almost, if not completely, horizontal (pl. 147, *a*, *b*). It would be quite difficult to separate jar-shape A from jar-shape B on the basis of the appearance of the exterior rim, but it was impossible to group them together once the unusual character of the inner rim treatment was recognized. There are 89 sherds that were classed as belonging to this group and of these 68 percent have a hardness of 2–2.5; 19 percent can be scratched by gypsum or 2; and 13 percent are 2.5. The texture is ordinarily medium fine as only about 10 percent of the sherds have a medium texture. The body of the vessel was tooled with a cord-wrapped paddle but the rims are commonly smoothed, especially where there is a noticeable outer rim band. The lower part of the rim on this type is straight in 46 percent of the sherds and slightly flaring in 48 percent. The manner in which the upper segment of the rim either curves or angles rather sharply outward gives an erroneous impression as to the curvature of the entire rim. On 53 percent of the sherds there is a definite upper rim band that was not completely molded onto the outer surface. The height of this rim band is given in Chart XVI. The shape of the lip was either rounded, or narrowed and rounded, in about an equal percentage of the cases. The thickness of the lip ranged from 0.3 cm to 1 cm, with over 85 percent being 0.4 cm to 0.7 cm. The range of the rim thickness is from 0.5 cm to 1.5 cm, with 80 percent of the sherds being between 0.7 cm and 1 cm. The measurement of the flattened, horizontal upper rim was also taken and was found to be between 1.5 cm and 2.5 cm in 85 percent of the sherds.

The color ranges from dark gray to yellowish tan and pinkish tan. Only about 30 percent of the sherds showed discoloration due to smoke blackening.

The estimated diameters were for Sherd No. 3, 11 inches; No. 22, 11 inches; No. 33, 15 inches; No. 68, 10 inches; No. 79, 9 inches; and No. 81, 13 inches.

JAR-SHAPE B

The sherds in this group comprised the largest single class from this site. The hardness of the group corresponds to that of the other sherds from this site. Sixty-four percent of the sherds are 2–2.5; 24 percent are 2; and 12 percent have a hardness of 2.5. The texture is almost entirely medium fine, as over 90 percent of the sherds can be listed under this category. The rim or upper portion of the rim is smoothed in 85 percent of the sherds, while the shoulder area or body is either tooled with a cord-wrapped paddle or tooled and subsequently smoothed to varying degrees in 71 percent of the cases. Eighteen percent of the sherds appeared to have smoothed bodies. This may be due to the small size of the sherd, as there are no body sections with smooth surfaces from this site. However, the sherds illustrated in the lower row of plate 79, *b*, almost certainly had bodies that were completely smoothed. It would appear that they were relatively rare at this site. I might also point out at this time that the sherd in the same figure showing the impression of a paddle carved into small squares is also atypical of the material found at this site.

In describing the rim shape I noted whether there was a sharp angle between the shoulder area and the rim. This feature most commonly occurred where the rim was straight and rarely where it was slightly flared. It never occurred with a flaring rim. As would be expected, the latter two rim shapes have a more gradual curve from shoulder to rim. Only one-fourth of the straight rims, however, were attached at a noticeably sharp angle to the shoulder area. There is a much higher percentage of flaring rims in jar type B than in jar type A. In the former almost 10 percent have flaring rims, while in the latter only 1 sherd out of 89 has a flaring rim. The added outer rim strip was plainly distinguishable on 18 percent of the rims on jars of this shape as contrasted with the 53 on type A.

The most common lip has a rounded outline and about half of them are of this type. Almost 30 percent are narrow and rounded, while 15 percent are flattened and rounded. There appeared to be no significant correlation between the shape of the lip and the shape of the rim. The lip thickness ranges from 0.3 cm to 1.1 cm, as shown in Chart XVII, with 80 percent of the sherds falling between 0.4 cm and 0.7 cm. The rim varied between the extreme of 0.5 cm and 1.8 cm, but 85 percent of the rims were from 0.6 cm to 1.1 cm in thickness. The rims are usually 0.2 cm to 0.4 cm thicker than the lips. Twenty-one percent of the interiors are discolored from smoke blackening and 38 percent of the exteriors show the same darkening. The exterior surface shows about the same range of coloration as did the jars in group A.

The estimated diameters for the sherds for which the cross section has been drawn is: No. 7, 16 inches; No. 11, 10.5 inches; No. 24, 9.5 inches; No. 27, 12 inches; No. 56, 13.5 inches; No. 77, 16 inches at the angle between the rim and shoulder; No. 108, 10 inches; and No. 123, 9 inches.

Loop and Strap Handles

There are comparatively few loop and strap handles in the collection in the Ceramic Repository, and most of these are quite fragmentary, as a glance at Chart XVIII, which describes this group, will show. There is a slightly greater percentage of loop handles than there is of the strap variety. These two types of handles were classed together at this site, and the lug handles were considered as a separate group. The specimens fall into the same category as the jars with regard to hardness and texture, as may be seen by observing the chart. Except on a few sherds, it was not possible to obtain the shape of the lip and rim, for, in the case of the loop handles especially, only the handle itself was available. Four out of five of the rims to which loop handles were attached had rounded lips, and one was flattened and rounded. Seven of the lips on the sherds with strap handles had rounded lips, three were narrowed and rounded, and one was flattened and rounded. All of the loop handles were attached to the upper rim at the lip by molding and were either molded or riveted at the base of the handle. Practically none of the loop handles at this site projected above the lip, and very rarely did any of them have bifurcated knobs. All of the strap handles save one were attached to the lip. Measurements were taken on the width of the lip and rim, where they were present, and on the handles. The lateral width of the handle, the front-to-back diameter or width, and the height were recorded. With the loop handles the width and thickness were approximately equal. The strap handles illustrated in plate 78, *a*, are representative of the type, although the handles of Sherds 1 and 5 are decorated. There were no decorated strap handles in the study collection. The loop handles are shown in plate 77, *b*, while two methods of attaching the loop handle are shown in plate 148, *a*. The third sherd in the bottom row has a portion of the rivet projection which was inserted in the side wall. The fourth sherd is the upper portion of a rim against which the upper end of the handle was placed. The handle has the portion which fits against the rim facing the reader.

Rim Sherds With Lugs

Fifty-two of the rim sherds belonging to jar-shaped vessels possessed rim lugs. These were of two main types. The first was represented by only five specimens and consisted of two rather small, horizontally projecting, rounded lugs. The second type is a horizontal rim lug which was attached to the rim just below the lip or coextensive with the lip. There was no significance in size or shape that was correlated with the place of attachment. The hardness of the group is again 2–2.5, and the texture is prevailingly medium fine. The surface finish is analogous to that on jar shape B. Seventy-five percent of the rims are straight, and the remainder are slightly flaring. This type of jar has the highest percentage of flattened and rounded lips at the site, as 26 percent can be so classified. Rounded lips constitute 34 percent, and the majority of the remainder were narrowed and rounded. Again, a relatively small number were smoke blackened, particularly on the exterior surface. The lip thickness ranged from 0.3 cm to 1 cm, with 80 percent of the lips measuring between 0.4 cm and 0.7 cm. Seventy-four percent of the rims were between 0.6 cm and 1 cm. The shoulder, when present, was not as thick as the rim in the majority of examples. The horizontal extent of the lug is described as the length, the vertical measurement is recorded as the height, and the width is the distance between the interior rim surface and the most lateral point of the lug. Although the length of the lugs varied from 2 cm to 8.3 cm, three-fourths of them were between 2 cm and 6 cm. Practically the same proportion held true in restricting the height between 1.5 cm and 2.5 cm and the width to between 1.5 cm and 3 cm. The estimated diameter for rim sherds described in Chart XIX are for No. 6, 13.5 inches; No. 9, 12 inches; No. 10, 11 inches; No. 12, 14 inches; No. 35, 10.5 inches; and No. 41, 6 inches.

Lugs of this type are illustrated in plate 77, *a*, and figure 53. The semicircular rim lug which is the third sherd in the second row of plate 77, *a*, is atypical for this site and for the other sites in the Norris Basin.

MISCELLANEOUS

There are a number of vessel fragments which represent types of less frequent occurrence. The second sherd in the third row of plate 77, *a*, has an outer rim strip or flange which runs horizontally around the upper portion of the rim. Two short parallel strips of clay join the horizontal strip to the lip. The shape of this vessel was probably that of an open-mouth jar such as is described under jar type B. The second sherd in the second row of the same figure is a small open-mouth jar with a short rim, flaring shoulder, and smoothed surface. While the small rim-lip lug is not atypical, the curvilinear, narrow, shallow incised lines with a single row of small dots are not commonly found. The bowl-shaped (?) sherds shown in plate 79, *b*, with the roughly parallel series of the prefired incised curvilinear and rectilinear lines are represented by only two sherds in the study collection. On one of these sherds the incising was made by a sharp point and on the other by a narrow but rounded point. The single sherd in the same picture with the stamped design of small squares is not matched by any of the sherds in the Ceramic Repository from this site. Also in the same figure are three sherds with raised circles which were probably caused by pressure from the inside while the clay was still moist. These sherds also have smoothed body surfaces, which is another unusual characteristic.

The clay objects illustrated in plate 81, *a*, are also unusual not only for this site but for all of the valley sites. The two modeled human faces and the animal-and-bird effigy heads, probably belonging to bowl-shaped vessels, are fairly common. The three in the collection at hand were taken from jars. One of the large body sherds of a jar has been sawed along its 10-cm length. It was certainly done before the sherd was discarded. Two of the sherds are reported as having painted surfaces, but none of the sherds in the material received for study were so treated.

Site No. 10.—Jar Rims, Type B

The largest series of sherds at this site is described on Chart XX. See the lower row of plate 149, *a*, *b*, and the first three sherds in plate 148, *b*. As a group their nearest relations are to be found at Site No. 11, type B. Of the 74 sherds belonging to this ware, 47 percent have a hardness of 2; 45 percent can be scratched by the fingernail; and the remaining sherds have a hardness of 2.5. All but four of the sherds have medium fine texture. Of these four atypical ones, one is fine in texture and the other three are medium.

The surface finish on the majority of the sherds was smoothed; in fact, two-thirds of the sherds can be so described. Only three of the rim sherds in this group bore unsmoothed cord-wrapped paddle impressions. Twenty-eight percent of the sherds had been tooled with the cord-wrapped paddle but the markings had been partially obliterated before firing. The body sherds, however, are predominantly marked with the cord tooling and are quite similar to the body sherds of Site No. 11. The rims are straight in 72 percent of the sherds; slightly flaring in 24 percent; while only one sherd had a flaring rim. There is an added outer rim strip on 43 percent of the sherds and the height of this rim strip is given on the chart describing this group of sherds.

The most common lip shape is rounded, 55 percent of the lips having this form. The lip was narrowed and rounded in 24 percent of the cases and the remainder were flattened and rounded. A little over a third of the sherds showed traces of smoke discoloration. The colors of the surface are gray, grayish tan, and a reddish to chocolate brown, with the latter two colors being in the minority. The lip thickness ranges from 0.2 cm to 1.1 cm, with 82 percent of the sherds being between 0.4 cm and 0.8 cm. The rim thickness ranges from 0.6 cm to 1.5 cm, but 72 percent of the sherds are between 0.7 cm and 1 cm. There are very few angled shoulders in this group and only 20 percent of the sherds are hole tempered.

Estimated lip diameters for Sherd No. 2, 15 inches; No. 3, 11 inches; No. 4, 12 inches; No. 5, 12.5 inches; No. 16, 10 inches; No. 18, 11 inches; No. 34, 5 inches; and No. 52, 11 inches.

JAR RIMS, TYPE A

This group also has its closest relationship with a type common at Site No. 11. There are 20 sherds of this type listed on Chart XXI, but Sherds Nos. 6 and 16 probably should not be listed with this group. Thirteen out of the 20 listed have a hardness of 2–2.5 and the other 7 are 2. The texture is medium fine. On six of the sherds the cord-wrapped paddling marks are quite plain; on five of them the markings have been partially obliterated, and on the remaining nine the surface is quite smooth. Twelve of the rims are straight, five are slightly flared, and three sherds were so fragmentary that

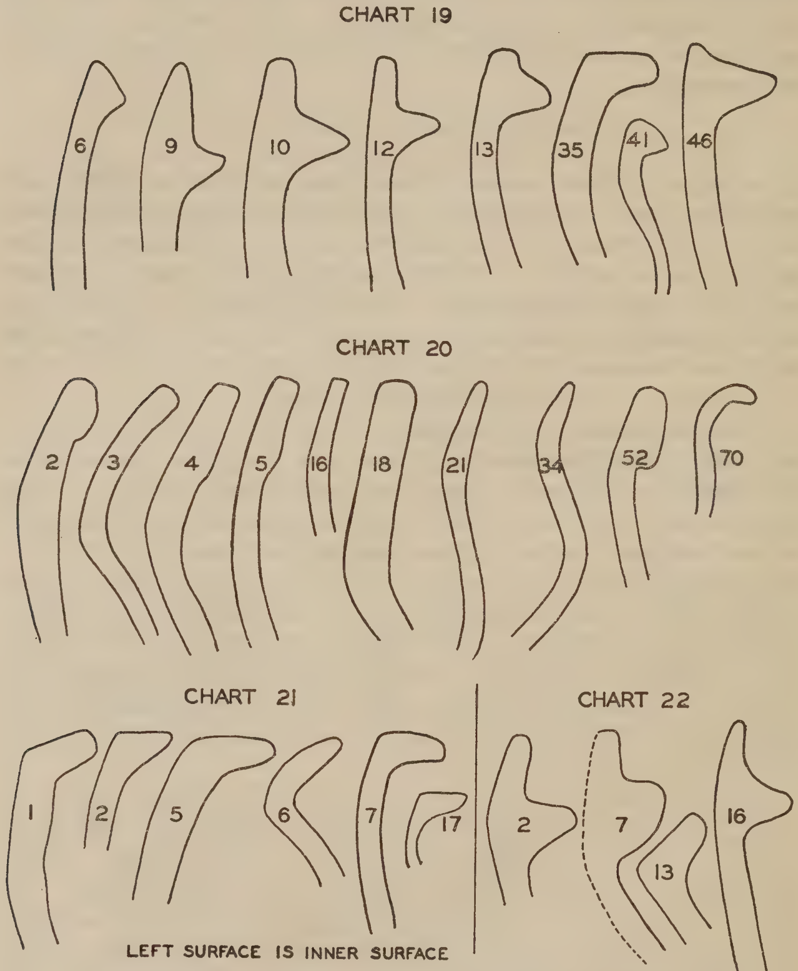


CHART 19
6
9
10
12
13
35
41
46
CHART 20
2
3
4
5
16
18
21
34
52
70
CHART 21
1
2
5
6
7
17
CHART 22
2
7
13
16
LEFT SURFACE IS INNER SURFACE

FIGURE 76.—Rim-sherd sections, Charts Nos. 19–22.

the rim shape could not be determined. There is an outer rim strip on 11 of the sherds and the size of this strip is given on the chart.

The lip is most commonly rounded or narrowed and rounded. The practically horizontal upper rim surface varies in width according to the size of the vessel, but averages between 1.5 cm and 2 cm. Only one of these sherds is hole tempered. The color range is similar to the first and larger group of jar rims.

The estimated diameter was taken on the interior of the sherd at the point where the rim curves outward. The measurements on sherds were: No. 1, 14 inches; No. 2, 10.5 inches; No. 5, 11.5 inches; No. 6, 8 inches; No. 7, 9 inches; and No. 17, 3.5 inches.

Sherds With Lugs

Of the 20 sherds listed on Chart XXII, 17 have horizontal rims or rim-lip lugs. The last three are sherds having the type of rim nodes or bosses that are much more common at Site No. 11. See Sherds Nos. 6 and 7 on plate 148, *b*. Half of the sherds could be scratched with gypsum, and of the rest only one was harder than the fingernail and required cryolite to scratch the surface. Two of the sherds were medium in texture and the remainder were medium fine. The surfaces of 16 were smooth and on the other four the cord-wrapped paddle impression had been partially obliterated. The lip was missing from four of the sherds, four are narrowed and rounded, four are flattened and rounded, and six are rounded. Five of the interior and five of the exterior surfaces showed smoke discoloration. The most common color is grayish tan. Five of the sherds have an added outer rim strip that corresponds in appearance and size to that on similar jar rims at Site No. 11.

The lateral extent of the lug, the perpendicular measurement, and the width were taken. Almost all of the lugs were between 3 cm and 6 cm in length; 85 percent were between 1 and 2 cm in their vertical dimension; and three-fourths of them were between 2 cm and 3 cm in width. There is not the variability in length that is present at Site No. 11 and the lugs do not reach the size of some of those at the latter site, but this may be due to the limited number of sherds obtained from Site No. 10. The general appearance of this type of jar from the two sites is quite similar.

Bowls

There were only nine sherds that could be classed as bowls and there are few diagnostic features helpful in cultural correlations present in the group. They are a trifle harder than any of the other pottery types at this site. The texture is medium fine and both surfaces are smoothed. The lip is most commonly rounded. Two of the sherds have small rim nodes which are coterminous with the lip. One of the sherds classed with this group approaches the beaker shape. The bowls are described on Chart XXIII and illustrated by Sherds Nos. 4 and 5 on plate 148, *b*. Sherd No. 1 has a lip diameter of 6 inches; No. 2, 3 inches; and No. 9, 7 inches.

Salt Pans

I have described 30 sherds on Chart XXIV, but only 20 of them are rim sherds. I included 10 body sherds so as to have a representative series of measurements on the size and type of weave represented at this site on the salt pans. Over 50 percent of the sherds had a hardness of 2–2.5, and the texture was predominantly medium fine. The lip on the rim sherds was most commonly rounded. Two of the lips, which are quite broad, have a central depression in the center of the lip which parallels the lip edges as it encircles the vessel. The only other site at which this is found is at Site No. 11. Half of the lips were less than 1.5 cm wide and the other half were above that figure. The lip and rim, or body thickness, is given on the chart.

Only two types of weave were found on these salt pans, the simple twine weave with a clockwise twist accounting for 19 out of the 22 sherds on which the impression was clear enough to be discernible. The other three sherds showed a variety of twilled twining in which the weft is fairly large, closely spaced, and the warp is also closely spaced. The warp threads have not been stretched from one weft thread to the next, and the zigzag design is not apparent. The width between five-warp and five-weft threads can be found on Chart XXIV. Only four of the sherds are hole tempered. Three lip diameters were estimated at 21 inches, 24 inches, and 25 inches.

Miscellaneous

There are three loop handles in the study collection, one of which is oval and the other two are round. The raised rim, so common at Site No. 11, is represented in the study collection by only four fragmentary pieces, but figure 47 shows a reconstruction of a vessel based on a large sherd from this site. One shell-tempered, smooth-surfaced sherd has an impression of a carved paddle with a diamond-shaped figure with 1 cm dimensions.

Site No. 19.—Jar Rims

The two largest groups of sherds at this site were the plain rims belonging to vessels of the jar shape and rims of the same type of vessel which carry lug handles. The plain rims number 34 and are described in Chart XXV (pl. 150, *b*). Only three of these have a hardness of 2, and only one is hole tempered. Forty-seven percent are 2.5, and 44 percent can be scratched by the fingernail. This is the hardest group of rim sherds for any of the valley sites. The texture is almost entirely medium fine, as only two of the sherds are fine and but one is medium. The rim area is almost entirely smoothed on all but four of the sherds, while the body or shoulder area, when present, sometimes bears the impressions of a cord-wrapped paddle. The rims are predominantly straight and of medium height. A few sherds have a high rim. Sherd No. 4 is an

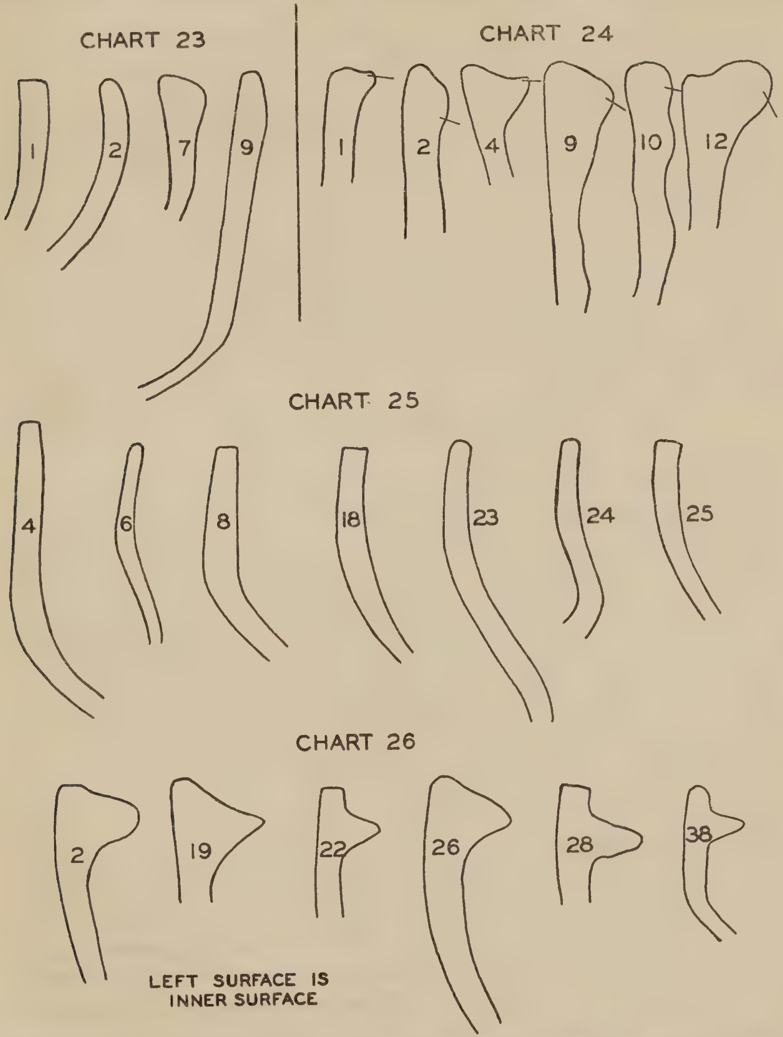


CHART 23
1
2
7
9
CHART 24
1
2
4
9
10
12
CHART 25
4
6
8
18
23
24
25
CHART 26
2
19
22
26
28
38
LEFT SURFACE IS INNER SURFACE

FIGURE 77.—Rim-sherd sections, Charts Nos. 23–26. The slope of the rims in Chart 24 should be at about a 30° angle.

exceptional example, and such sherds as Nos. 24, 28, and 29 are quite short. One of this group of sherds has fine grit temper, is heavily smoke blackened on both the exterior and interior surfaces, and the smoothing marks, made by a pebble or gourd, are plainly visible.

The lip is commonly rounded or flattened and rounded. Only six of the sherds had narrowed and rounded lips. In many cases the dividing line between the first two types of lip outline was rather indistinct, and only a few of the sherds possessed the horizontally flattened lip which was so common at some of the sites. The lip thickness ranges from 0.2 cm to 0.8 cm, with almost 90 percent being from 0.4 cm to 0.7 cm. The rims are from 0.5 cm to 1.1 cm, with 94 percent having a width between 0.6 cm and 1.0 cm. The shoulder is commonly a trifle thinner than the rim section.

The lip diameters for the following sherds were: No. 4, 17 inches; No. 6, 5 inches; No. 8, 10.5 inches; No. 23, 6 inches; No. 24, 9 inches; and No. 25, 11 inches.

Jar Rims With Lug Handles

A description of rims of this type with the measurements of the lugs in association is given on Chart XXVI. All of these sherds were shell tempered, but as a result of burial in the ground four of them have become hole tempered. Fifty-one percent of the sherds could be scratched by the fingernail, 37 percent have a hardness of 2.5, and the remainder could be scratched by gypsum. The texture is medium fine with four of the pieces having a medium texture.

Only four of the sherds were slightly flaring and the rest were straight. The lips were usually flattened and rounded, or rounded. It was difficult to accurately describe the lip shape on some of the sherds because of the proximity of the lug to the lip which tended to obscure the lip shape. A slightly smaller percentage of the rim sherds with lugs showed the results of smoke blackening as compared with the plain rims. The lip thickness ranges from 0.35 cm to 1.1 cm, with 78 percent being between 0.7 cm and 1 cm. Almost three-fourths of the lugs were attached a short distance below the lip. The dimensions of the lugs are given in the chart and the distance below the lip if they were not coterminous with that portion of the vessel.

Eighty percent of the lugs were between 3 cm and 7 cm long; 85 percent were between 1 cm and 2 cm high; and 75 percent of them were between 1.5 cm and 2.5 cm wide. The lugs at this site then are slightly longer, not quite as high, and do not project from the rim as much as the lugs at Site No. 11. A few of the sherds on this chart have thickened rim-lip bands which are notched, but the majority are true horizontal, semicircular rim, or rim-lip lugs.

The estimated diameters at the lip for representative sherds are: No. 2, 10 inches; No. 19, 12 inches; No. 26, 12.5 inches; No. 28, 10 inches; No. 38, 7.5 inches.

Bowls

Bowl-rim sherds comprise a large percentage of the fragments of pottery in the study collection from this site. There are 27 sherds of this type. The exterior surface hardness of 85 percent is 2–2.5 and the remainder have a hardness of 2.5. The texture is medium fine and the surface finish except in one case is smooth. Seventy percent of the lips are flattened and rounded and the rest are either rounded or narrowed and rounded. The lip thickness is between 0.5 cm and 0.8 cm on 80 percent of the sherds and 90 percent of the rims are from 0.6 cm to 0.9 cm thick. Since over half of the interior and exterior surfaces show discoloration from smoke blackening, the bowl sherds have the highest percentage of this characteristic at the site.

As can be seen on Chart XXVII, quite a number of the sherds have small rim lugs or nodes, some of which may have been frog effigy bowls. (Figs. 69, 70.) Nine of the rims have a rather narrow added rim band which has narrow perpendicular notches. The distance between five of these notches varies on the different sherds from 1.6 cm to 5.1 cm, the measurement being made from the bottom of the first and the fifth notch. The horizontal smoothing marks are more clearly visible on these vessels than on the others present at the site.

The lip diameters for the following sherds are: No. 1, 8 inches; No. 9, 10 inches; No. 14, 11 inches; No. 16, 8.5 inches.

Strap Handles

There are 13 sherds in the study collection described on Chart XXVIII that are of the type found on plate 117, *a*. One of the handles in the Ceramic Repository, Sherd No. 14, is a loop handle, as can be readily seen by contrasting its measurements with the more common type. These handles are all attached to the lip, with the sides of the handles either falling straight from the lip or converging from the lip to about half the length of the handle when their sides become parallel. None of the handles in the study collection are decorated, but the first sherd in the second row of plate 117, *a*, has two groups of three narrow, shallow, parallel incised lines that cross each other at about a 40° angle near the central part of the handle. Ten out of the 14 sherds described can be scratched by the fingernail and the other four have a hardness of 2.5. The texture is medium fine.

MISCELLANEOUS

There are two sherds in the Ceramic Repository which are probably the same type as is shown in plate 117, *b*. There are also three sherds with the same smooth surface finish and fine compact texture that have small horizontally flattened heads on the shoulder area with a single "eye" on the upper surface of the projecting face, that are probably fragments of frog effigy bowls. These five sherds have a hardness of 2.5. One small rim sherd appears to have had a chevron design formed by narrow, parallel, shallow incised lines. The notched circular ridge of clay on the lower rim that is shown on the second sherd in the first row of plate 118, *a*, is represented by three small pieces in the study collection. The faces that are illustrated are not duplicated in the collection that was available for detailed study. The sherds showing the incised decorations also are not common at this site. The first sherd in the third row has limestone temper if the surface finish can be used as an accurate criterion.

There are 19 sherds from this site that have limestone as part of their grit temper. Some of the sherds also show specks of mica on the surfaces. Of these, three have exterior surface finishes which were brushed and show the horizontal striations peculiar to this type. Ten of the sherds were impressed with a paddle upon which small squares or rectangles had been carved. Three pieces are fairly smooth on the exterior surface and three have a woven impression. This group of sherds would be much more "at home" in the cave sites described in other parts of this report and a knowledge of the way in which they became located at this site would do much to explain the history of Site No. 19.

There are only seven sherds from this site that belong to the Salt Pan ware and of these only two sherds have a sufficiently clear textile impression to determine the type of weave. On these two sherds the weave is the common simple twine weave with clockwise twist. One sherd has what appears to be the twilled twine weave with a large and closely spaced weft, partially obliterating the closely spaced warp.

SITE No. 5.—SALT PANS

There are 53 sherds representing salt pans from this site, and of these only 15 were rims. Compared with the other wares at this site the rim sherds on which the detailed observations were taken were the hardest group. Two-thirds of the sherds could not be scratched by gypsum but could be so marked by the fingernail; the other third was scratched by gypsum. The texture is medium fine and the shape of the lip is either rounded or flattened and rounded. There are more lips of the latter character, and this is also true of the other wares. The lip is usually at right angles to the rim and the rim has a slight incurve. Smoke discoloration is noticed on but few of the sherds. Most of the rim sherds are so heavily eroded that it was impossible to get measurements of the warp and weft, and in some of the cases to determine the type of weave. The lip and rim thickness of the salt-pan sherds at this site is less than those at Site No. 11, although as a group these measurments are larger than those for any of

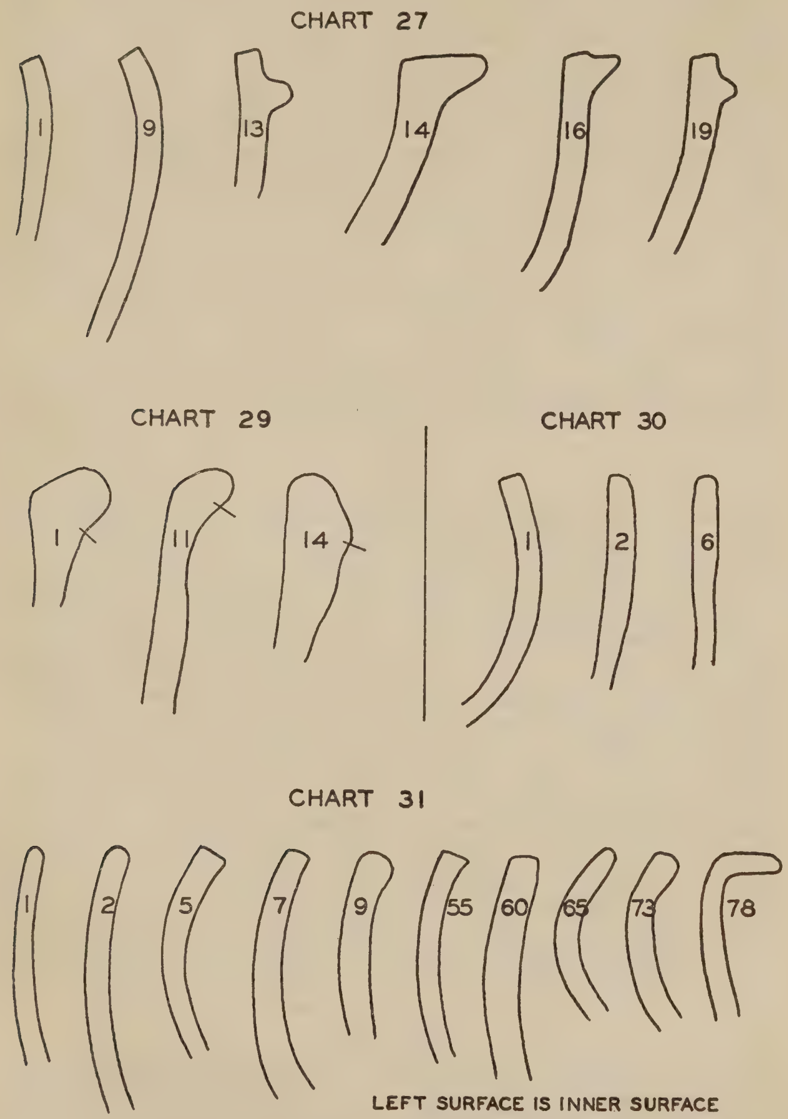


CHART 27
1
9
13
14
16
19
CHART 29
1
11
14
CHART 30
1
2
6
CHART 31
1
2
5
7
9
55
60
65
73
78
LEFT SURFACE IS INNER SURFACE

FIGURE 78.—Rim-sherd sections, Charts Nos. 27, 29–31.

the other wares at the site. Only one lip is less than 1 cm wide and one is over 2 cm in width.

Only two of the rim sherds on which the textile impression could be identified had a type of weave differing from the simple twine weaving with a widely spaced weft. Sherd No. 11 on Chart XXIX had a number of different fabric impressions upon it, as though they had been pressed upon the clay from several angles. The one clear impression showed a closely spaced weft which wound about two warp elements at a time—a variety of twilled twining, with a close weft. The other fabric was also of the twilled-twining variety but had a wide weft and the zigzag appearance of this type of weaving was plainly visible. Of the 38 body sherds, 22 were of the simple twine variety, 10 had twilled twining, and on 6 the type of fabric was not discernible. The spacing of the warp and weft is much the same as was found at Site No. 11.

The estimated lip diameters for the following were: Sherds No. 1, 18 inches; No. 14, 17 inches; No. 16, 17 inches.

Bowls

There were only nine rim sherds belonging to bowls. These sherds were softer than external appearance would lead one to believe, as only one of them was hole tempered, but seven out of the nine could be scratched by gypsum. Three of the sherds have a fine texture and the surface finish is smooth. Only on Sherd No. 1, Chart XXX, was there any indication of previous tooling and this was so slight that the sherd was classified on the basis of this character with the other eight sherds. Four of the lips were rounded and five were definitely flattened with rounded edges. Only three out of the small group showed the discoloration resulting from smoke blackening. Five of the exterior surfaces have a pinkish tinge; only one is dark gray and the others are mottled tannish grays. There is no decoration on the exterior surface of the lips of these bowls. The lip and rim measurements are given in the chart.

The estimated lip diameter for Sherd No. 1 is 4 inches; No. 2, 8.5 inches; No. 6, 8 inches. See first two sherds on plate 150, *a*.

Jar Rims

The most common type of pottery found at this site is the jar. A reconstruction of the sherd figured in the lower right-hand corner of plate 32, *b*, has been made by Mr. Frazer. It is shown in figure 20. This drawing shows the slightly flaring, rather short rim that is often present. As I visualize the shape of the vessel from the fragments at hand, I believe that characteristically the jars at this site had a relatively long sloping shoulder and a short, straight, or slightly flaring rim. As I have interpreted the rim shape, slightly more than half are straight, 41 percent are slightly flaring, and the remainder are flaring.

Fifty-nine percent of the sherds can be scratched with gypsum and the rest can be scratched with the fingernail. The texture is medium fine. The lip shape is flattened and rounded on exactly half of the sherds, rounded on 37 percent, and narrowed and rounded on the remainder. The rim pieces show the effects of smoke discoloration on approximately one-fourth of the exteriors or interiors. Those sherds that have flattened and rounded lips are usually thicker by 1 or 2 mm at the lip than at the rims. Otherwise the lips are thinner, by about the same measurements, than the rim. The measurements for the lip and rim thickness are given in Chart XXXI.

The width of the lips ranged from 0.4 cm to 1 cm, with 72 percent being between 0.5 cm and 0.9 cm. The narrowed and rounded lips were 0.4 cm or 0.5 cm thick, while 90 percent of the flattened lips with rounded edges were 0.6 cm to 1 cm. The majority of the rounded lips were from 0.5 cm to 0.8 cm. Eighty-five percent of the rims were between 0.6 cm and 0.9 cm and 72 percent were either 0.6 cm or 0.7 cm in thickness. Seven of the sherds have an added outer rim strip that was not smoothed into the outer rim surface. Sherd No. 76, Chart XXXI, is identical in the shaping of its upper rim segment into a horizontal plane to the sherds representing jar shape A at Site No. 11. The following three sherds on the same chart have their upper rim angled outward at 45°, so that this portion of the rim is horizontal.

The estimated lip diameters are: Sherd No. 1, 12.5 inches; No. 2, 9.5 inches; No. 5, 14 inches; No. 7, 10 inches; No. 65, 5 inches; No. 73, 11 inches; No. 78, 10 inches.

The exterior surface of almost all of these rims is smoothed and the smoothing appears to continue well onto the shoulder area. Almost half of the sherds were hole tempered, which at this site, as in practically all of the sites from the Norris Basin where this occurs, was caused by the disintegration or leeching out of the shell which formed the tempering material. The same cause probably accounts for the softness of the sherds. See last four sherds on plate 150, *a*.

HANDLES

All of the handles in the study collection and those illustrated in plate 32, *b*, are of the loop variety. Most of them, of rather large size, as shown in the above mentioned illustration, were attached to vessels of the jar shape described in Chart XXXI. There are none of the small loop handles found in the Middle Mississippi wares. Curiously enough, there were no lug handles or strap handles found at this site. Most of the loop handles were attached to the shoulder area by riveting and were molded to the lip. A characteristic of these handles at this site is their projection above the lip, a trait that does not occur at Site No. 11. Furthermore, some of those that still retained the upper portion of the handle possessed a raised knob, which was either single or bifurcated. These determinant characters are well shown in the illustration as well as two handles with small knobs on the outer surface. Only one of the sherds at this site belongs to the type of jar which was fairly common at Site No. 11 and has a number of raised points on the rim with a small lug just below the lip of the raised portion. There were portions of 37 handles in the study collection that could be examined in detail. They conformed to the characteristics of the jars as far as hardness, surface finish, texture, and color are concerned.

Grit-Tempered Sherds

In the lower left-hand corner of plate 32, *a*, there is illustrated a sherd that undoubtedly should be classed with Type III at the two cave sites discussed in an earlier section of this report. There are seven sherds in the study collection that are of the same type. The tempering material is crushed rock with quartz, mica, feldspar, and other minerals appearing in the clay matrix. One of the sherds could be scratched with the fingernail, two had a hardness of 2.5, two had a hardness of 3, and one was scratched first by 3.5. An analysis of the clays would undoubtedly show that these sherds were not made from the same clay as the rest of the sherds found at the site. They belong to another cultural group.

Site No. 4

There are about 40 sherds in the Ceramic Repository that came from Site No. 4. Of these, almost 90 percent are hole tempered and in very poor condition. There are only four rim sherds present and they are all hole tempered with a hardness of 2. The texture as far as it can be determined is medium fine. Only one of the sherds shows the impressions left by the cord-wrapped paddle. This is a lower rim and shoulder section which formerly held a loop handle. The surface finish on the remaining sherds is smooth. Three of the rims are straight and one has a slight flare. Two of the lips are rounded and two are flattened and rounded. There are two loop handles in the study collection. One of these is a rather small rounded handle which is attached to the lip without projecting above it and which was attached to the shoulder area by riveting. The other handle is an oval loop handle which projects above the lip and the projection is centrally depressed.

SITE NO. 2

This site has the largest percentage of hole-tempered sherds of any of the valley sites represented in the Ceramic Repository collection. Only two of the sherds from this site have not had the shell temper leached out to such a degree that the sherds can be spoken of as being hole tempered. Six of the sherds are salt-pan fragments. The markings are quite indistinct but four appear to be simple twine weave and two are probably twilled twine. One of the salt-pan sherds is a rim piece and has a rounded lip which does not project beyond the rim width.

There are 121 small and medium size hole-tempered fragments that have smoothed outer surfaces and 12 that show the cord-wrapped paddle impression. Three sherds have space where once a loop handle was riveted into place. Four out of the six rims are flattened and rounded, one is rounded, and the sixth is narrowed and rounded. The rims are all straight. There are two oval-shape loop handles present that are above average size.

SITE NO. 9.—JAR RIMS NOT "HOLE" TEMPERED

By far the majority of the pottery sherds represented in the study collection belong to vessels of the jar shape. When the rim pieces were separated from the body sherds it was found that there were 100 jar rims that were quite plainly shell tempered and 100 that were "hole" tempered. This group of rim sherds is described on Charts XXXIII and XXXIV under these two heads. There is a small percentage of tempering material in the pottery from this site. As is usual at the valley sites, the added aplastic is crushed shell. This shell has leached out from approximately half of the sherds from the site and the sherds appear "hole" tempered. See sherds 2 and 3 on plate 151, *a*.

The sherds listed in Chart XXXIII are quite obviously shell tempered. Seventy-three percent have a hardness of 2–2.5, 12 percent have a hardness of 2, and 14 percent are 2.5. The contrast shown by the sherds of Chart XXXIV is striking, for with the "hole"-tempered sherds 91 percent can be scratched with gypsum and only 9 percent are 2–2.5 in hardness. The texture of the sherds in both groups is predominantly medium fine and the surface finish is smoothed on practically every sherd. Chart XXXIII has as its last 12 sherds what I believe is an alien type at this site. They would be perfectly at home at Site No. 11. On these sherds the surface is tooled with a cord-wrapped paddle nearly to the lip but the upper rim is smoothed. The surface treatment then is quite different from the majority of jar rims at this site. See sherds 5, 6, and 7 on plate 151, *a*.

The color of the above-mentioned 12 sherds also serves to distinguish them from the common type at this site. They are a light grayish tan, while the predominant color at the site is dark gray, brownish gray, and an orange to chocolate brown. The last two colors are particularly characteristic of the "hole"-tempered group. Smoke discoloration appears on almost half of the exterior surfaces of both groups and to a less degree on the interior surfaces.

As is the case when working with rim sherds, many of which are quite small, the degree of accuracy of the interpretation of the shape depends to no small degree on the size of the sherd. In general, when the sherds were laid out and numbered, the largest sherds were the first in line. The last 12 sherds in Chart XXXIII do not follow this rule. The shape, as far as it could be determined, was either straight or slightly flaring. The majority of the semiflaring rims on Chart XXXIII were in the first 50, and there were 10 percent more semiflaring rims among the sherds that did not have the shell leached out of the surfaces than was the case with those that had hole temper as one of the distinguishing characteristics. Only four of the sherds listed in Chart XXXIII and only one in Chart XXXIV have the slightly thickened upper rim. This is mentioned because this is the nearest approach to the type of rim found on one of the jar shapes in the southern focus of the Fort Ancient Aspect. In the latter Aspect this general type of rim is practically always flaring or semiflaring, is often thickened just below the lip, and the lip is narrowed and rounded, or rounded.

The lip on these jars at this site is very rarely narrowed and rounded, as only seven in the first group and two in the second group have this shape. Half of the sherds in the first group have flattened and rounded lips and most of the others are rounded. In the second group 68 percent are flattened and rounded and 30 percent are rounded. With the occurrence of the flattened and rounded lip there is also a widening of the lip and it usually is as wide or wider than the rim. The lip thickness of these two groups ranges from 0.3 cm to 1.5 cm, with 81 percent of the sherds being between 0.5 cm and 0.9 cm. The width of the rim varies from 0.4 cm to 1.9 cm, but 87 percent are between 0.5 cm and 0.9 cm and over 75 percent between 0.5 cm and 0.8 cm. A few of the lips may slant inward or outward, but the great majority of them are horizontal.

The estimated lip diameters for sherds on Chart XXXIII are: No. 2, 13 inches; No. 3, 11.5 inches; No. 1, 12 inches; No. 10, 8 inches; No. 84, 9 inches; No. 85, 6.5 inches; No. 86, 4.5 inches; No. 88, 3.5 inches; No. 90, 14.5 inches. The diameters for a few of the sherds on Chart XXXIV are: No. 3, 10 inches; No. 4, 5 inches; No. 14, 8 inches.

HANDLES AND LUGS

One of the outstanding characteristics of the pottery from this site is the large number of loop handles and sherds showing the place of attachment for loop handles. In the study collection there is a total of 193 pieces that were classed as loop handles. Of these 82 are listed and described in Chart XXXV. There are 88 fragments of handles which were divided as to the shape of the cross section of the handle. Forty-eight of these were round and 40 were oval. Thirty of the fragments that were round in cross section were hole tempered and 18 were not hole tempered. Twenty-seven of the oval-shaped fragments were hole tempered and 13 were not hole tempered. Shoulder sections to which loop handles had been attached numbered 23 and of these 12 were hole tempered and 11 still retained the shell particles in the clay matrix. Approximately 70 percent of the loop-handle fragments were hole tempered, which is a higher percentage than was found on the type of rim sherd to which the handles were undoubtedly attached.

An accompanying characteristic to the prevalence of hole tempering is the softness of the loop handles. The 82 loop handles contained 47 (57 percent) that could be scratched by gypsum. By examining Chart XXXV it will be seen that the last 18 sherds, which in the main carry lug handles, have only three pieces with a hardness of 2 and that only two sherds are hole tempered. Most of this last group would be more typical at Site No. 11. The texture of the sherds is medium fine.

When the rim shape was discernible it was predominantly straight, with 28 percent being semiflaring. The lips are usually flattened and rounded, but the lips of the last group of sherds have a stronger percentage of rounded and narrowed and rounded contours than the loop-handle sherds at this site.

For the majority of the sherds the color range is from a dark chocolate brown to reddish brown and dark gray, while for the atypical sherds the common color is a lighter tannish gray.

Many of the handles have become separated from the rim and hence the measurements of that section and of the lip could be taken only in a relatively small number of cases. The lower portion of the handle usually was joined to the shoulder area by riveting. The upper part was attached to the rim-lip area by molding. In a number of observable cases instead of the handle itself being molded onto the body and forming the junction in that manner, it was very loosely attached to the place of junction and additional clay was used to make the bond. The first 33 handles were so formed that they projected above the level of the lip and were shaped into different knob-like forms. The first sherd in plate 45, *a*, shows the button top, the second and eighth sherds show varieties of the raised portion being bifurcated, or two knobs separated by a central depression. Sherd No. 11 is a good example of the large broad knob present on a number of the sherds. None of the sherds in the study collection have the series of indentations figured on Sherd No. 3, plate 45, *a*. The majority of the handles are flush with the lip at the upper juncture, as illustrated by Sherds Nos. 5, 7, and 10 of the same figure.

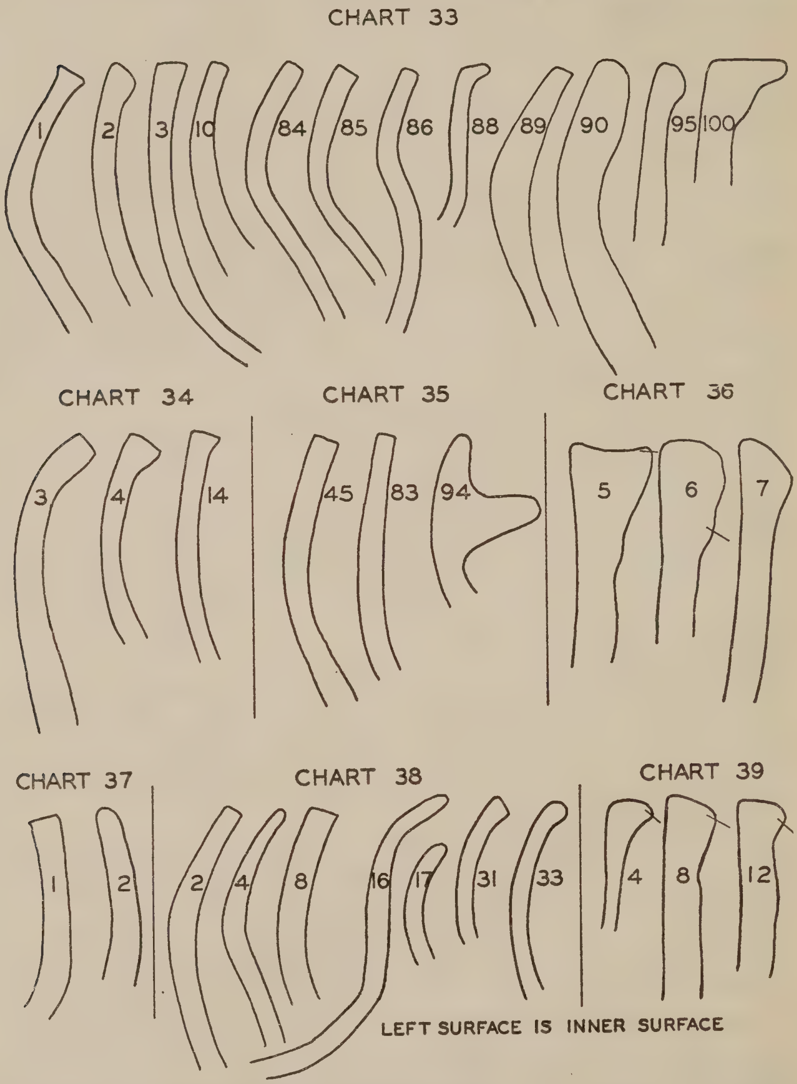


CHART 33
1
2
3
10
84
85
86
88
89
90
95
100
CHART 34
3
4
14
CHART 35
45
83
94
CHART 36
5
6
7
CHART 37
1
2
CHART 38
2
4
8
16
17
31
33
CHART 39
4
8
12
LEFT SURFACE IS INNER SURFACE

FIGURE 79.—Rim-sherd sections, Charts Nos. 33–39. The slope of the rims in Charts 36 and 39 should be at about a 30° angle.

The measurements of the handles are the lateral, or from side to side, the front to back, and the length or height. Obviously those handles in which the first two measurements are identical or nearly so will present a nearly round cross section, while those on which the lateral measurement exceeds that of the second measurement will assume an oval appearance in cross section. Two of the sherds upon which I have been able to make detailed observations, and the third sherd on the bottom row of plate 46, *b*, have a horizontal row of nodes about the rim. The sherds in the collection at hand are listed as Nos. 85 and 86 on Chart XXXV. The rim lugs listed on the same chart are measured as to their lateral or horizontal extent and as to their height. Sherd No. 97 is unusual for any site in the valley. Sherd No. 98 is the fragment of what was probably a large strap handle with sides converging from the lip toward the basal attachment.

Salt Pans

The examination of the salt pans was made particularly difficult by the erosive processes that removed the shell tempering material and in numerous cases obliterated the textile imprint on the sherd or made the impression so vague that an accurate statement as to the weave is impossible. There are 25 rim sherds upon which a detailed analysis was made. This group is largely hole tempered and is accordingly quite soft. The texture corresponds to that of the rest of the sherds from the site, although two fragments of this group have a medium texture. The rim shape is almost straight. Sixty percent of the lips are flattened and rounded, the remainder being rounded. Five of the lips slope inward and two slope outward; otherwise the lips are horizontal to the rim. Smoke blackening is most common on the outer surface. The lip thickness on the different sherds varies from being approximately twice that of the rim to having the same dimension. The lip diameter of No. 7 is 11 inches.

One of the rim sherds has a smoothed outer surface with no textile impression. This is the type of salt pan common in the southern focus of the Fort Ancient Aspect, but is quite rare in the area under discussion. See sherd 10, plate 151, *a*. The most common textile design on the salt pan at this site, as at others in the Norris Basin, is the simple twine weave. Fourteen of the 25 rim sherds have this fabric impression. Two of the sherds have the twilled twine weave but the weft threads are placed close together and the warp is not discernible. One of the sherds has an impression of a twilled twine weave which leaves a zigzag design in the warp. Two of the sherds, of a simple twine type, have a wide cord impression 0.35 cm wide, affording a striking contrast to the usual thin strand. See sherds 11, 12, and 13, plate 151, *a*.

The rimless sherds probably present a more accurate picture of the percentages of the different types of fabrics used on the salt pans. Fourteen of the sherds were so eroded that the type of weave represented was not decipherable. Nine body fragments were impressed with the twilled twine weave with close warp and weft. Thirty-two have the plain twine weave with open weft, and of these 11 were made with the large thread. Eleven of the sherds have the twilled twine weave which produces a zigzag or diamond-shape imprint.

Bowls

This type of vessel is represented by only 10 specimens. The incurving rim and smoothed surface finish are the distinguishing characters of this shape. It is the hardest ware at the site, as all but one of the sherds had a hardness of 2–2.5. The lip is either rounded or flattened and rounded. Only three of the sherds were hole tempered. Sherd No. 10, Chart XXXVII, has a small ridge on the upper rim which is transversely notched. These perpendicular notches are short and rather shallow and may have been made with the fingernail. The lip diameter for Sherd No. 1 is 8 inches. See sherd 14 on plate 151, *a*.

Miscellaneous

Three roughly circular pottery disks are included in the study collection. The exterior surface on one bears the marks of a cord-wrapped paddle, while the other two surfaces were smoothed. One sherd with a smooth outer surface and a curvature suggesting that it was part of a bowl has a light red paint on its outer surface. One sherd is wholly out of character with the rest of the pottery found at this site. It is a small sherd with rather long shoulder and a short rim set at a 45° angle to the shoulder. The lip and shoulder are 0.4 cm thick; the lip is rounded. The tempering material is coarse grit which looks like river sand. One of the pieces of grit is 0.6 cm long and 0.3 cm wide. The rim and upper shoulder are decorated with an unusual stamp paddle design. The squares are small, 0.3 cm on a side, but the impressions are quite deep. There are two steatite fragments 1 cm thick that were probably parts of steatite bowls, as the interior surfaces are quite smooth.

Site No. 17.—Jar Rims

As is usual in the Norris Basin, the ordinary jar-shaped vessel far outnumbers any other type. Only 49 rim sherds were present, and they are described in Chart XXXVIII. An unusual feature of this group at Site No. 17 is the use of crushed limestone for tempering material in 35 percent of the sherds, with the remainder of the fragments described having crushed shell for the aplastic. Those sherds which have limestone temper also have a surface which is sandy to the touch, and in the case of hole-tempered sherds those fragments with the sandy surface were grouped as probably having had limestone instead of shell for the binding material. Almost 50 percent of the sherds could be scratched with gypsum and 41 percent were scratched with the fingernail. Four out of five of the sherds with a hardness of 2.5 had limestone as the aplastic and the remainder had a hardness of 2.5.

The texture of the jar rims is predominantly medium fine. Only one of them has a fine texture and seven are medium. The surface finish on all but two of the sherds is smoothed. As mentioned above, those sherds with limestone temper have a gritty feel and contain mica, while those with shell temper have a "soft" feel. Two of the sherds show on their surfaces the results of having been malleated with a stamped paddle. The impressions were blurred so that no measurements could be taken because of erosion of the limestone tempering material and perhaps because of surface smoothing after the paddle impression had been applied. Almost 70 percent of the rims are straight, while the remainder, with the exception of one rim, which is flaring, are semiflaring. Nearly 27 percent of the lips are flattened and rounded and the other lips are equally divided between a rounded shape and a narrow and rounded shape. On a good number of the sherds, particularly those with limestone aplastic, the upper rim is slightly everted. On this same type of sherd the inner wall of the rim as it approached the lip is thinner, giving the sherd the impression of having a greater flare than it actually possesses, and allowing the formation of a narrowed and rounded lip. While this shape of lip is not limited to the semiflaring rim, 10 out of the 14 rims of this type have narrowed and rounded lips. The lips range in thickness from 0.2 cm to 1.1 cm, with 78 percent between 0.4 cm and 0.7 cm. The rims, although varying from 0.4 cm to 0.9 cm, have 83 percent of their number between 0.5 cm and 0.8 cm. The estimated lip diameters are: Sherd No. 2, 9 inches; No. 4, 7 inches; No. 8, 11 inches; No. 33, 9.5 inches; No. 16, 4.5 inches. About 60 percent of the sherds show the effects of smoke discoloration. The prevailing surface colors are grayish chocolate or reddish brown, and grayish tan. The first six sherds on plate 151, *b*, illustrate this shape.

HANDLES—LUGS

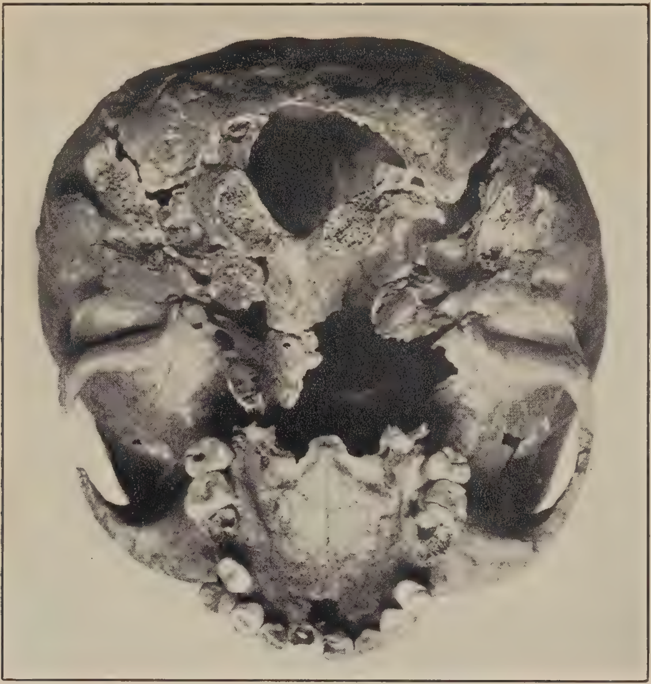
There are few handles or sherds showing places of attachment for handles in this group. Nine loop handles are present and of these five have a rounded cross section; the smallest having a diameter of 1.4 cm and the largest of 2.3 cm. The other loop handles have an oval cross section, as can be seen by the measurements of the best example which has a lateral width of 2.7 cm and a front-to-back measurement of 1.4 cm. Three of the loop handles have projections above the lip and on the other handles the lip section is not visible. Plate 103, *a*, has two loop handles pictured that are representative of the type in the Ceramic Repository. There are ten rim sections in the study collection that have the broken portions of loop handles, but no accurate idea as to the actual shape or size of the handle can be obtained. One rim and shoulder section has the lower part of a strap handle which measured 5 cm still attached to the lower rim. The only lug-type handle found at this site occurs on a vessel with a slightly incurving rim. The vertical height of this lug at its juncture with the rim is 1.4 cm, the length is more than 6 cm, and its outward projection from the exterior surface is 1.8 cm. The sherd itself has a thickness of 0.8 cm. The lug is located a trifle over 1 cm below the lip. The two short perpendicular lugs set flush with the lip, that are figured in the second row of plate 103, *a*, also must be considered as atypical of the usual type of handle at this site. None of the handles, or the sherds having a place for handle attachment, have limestone temper or the slightly abrasive feel on the surface.

Salt Pans

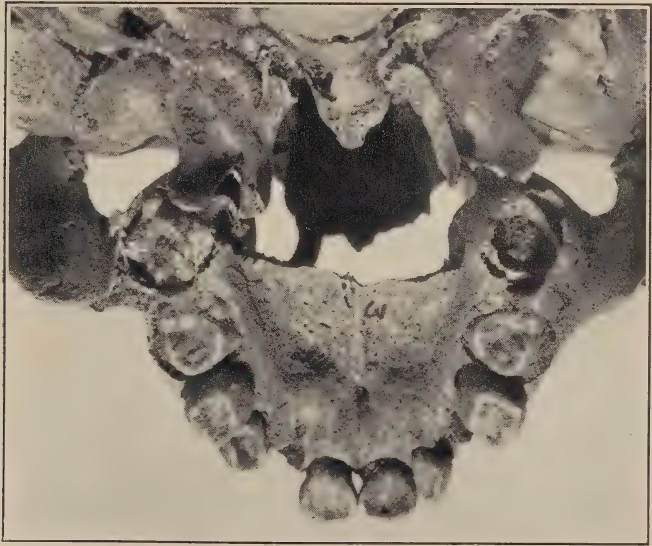
Only 14 sherds were available for a detailed statement of the type of salt pan at this site. Although only a few of the sherds were hole tempered, the number with sufficiently clear impressions to determine the type of textile applied to their surface was disappointingly small. All of those sherds listed on Chart XXXIX, upon which the type of weave could be determined, had been impressed with a fabric of plain twining. The sherd in the upper left-hand corner of plate 103, *a*, is a good illustration of the wide warp described for Sherd No. 12 on the chart. Sherd No. 14 is almost a duplicate in type to the sherd in the same figure which is just to the right of the smallest loop-handle rim sherd that is illustrated. There is only one example of twilled twining present, and that sherd is small and has no rim. The salt pans are quite soft, have a medium fine texture, and the lip shape is about equally rounded or flattened and rounded. In the majority of the cases the fabric impression is carried up to the lip and the lip is not conspicuously wider than the rim portion directly under it.

Miscellaneous

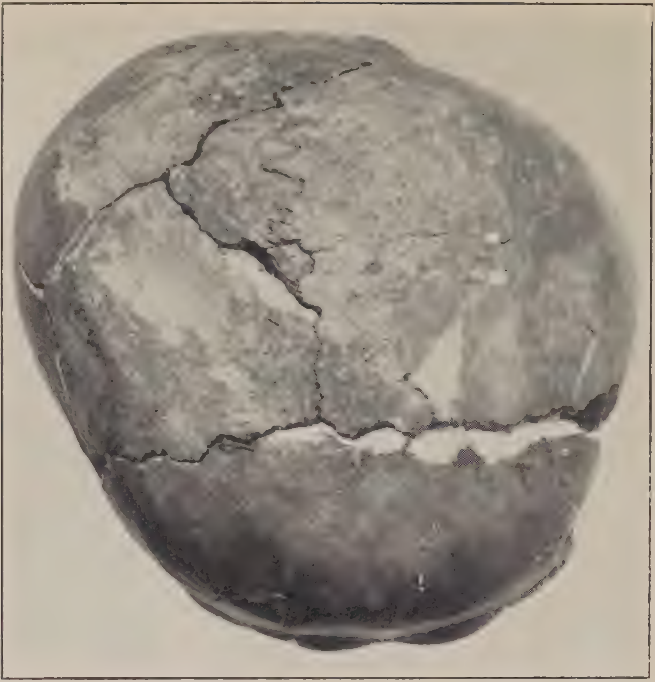
There are seven sherds in the study collection, and the one to the right of the piece with the perpendicular lug handles in plate 103, *a*, bearing the impression of a simple twine or plaited fabric with a wide warp which is obscured by the closely woven weft. On one of



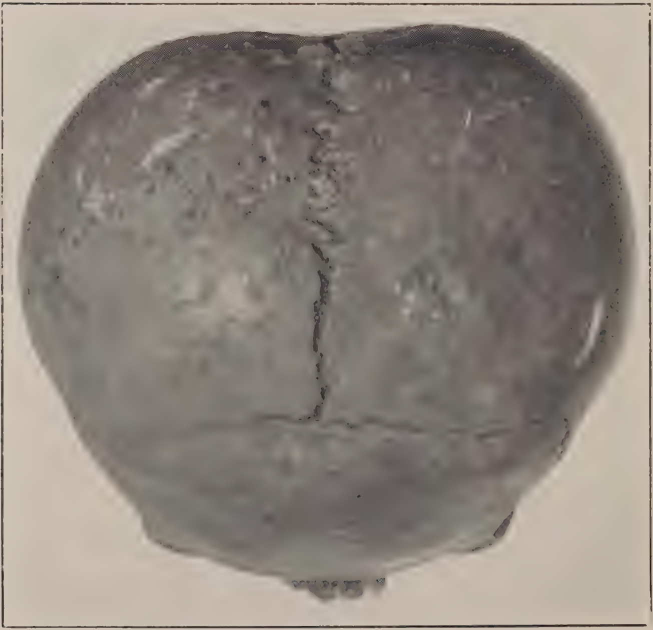
a. Infant skull showing erupting molars and distinct notching. Site No. 15, Burial No. 6B.



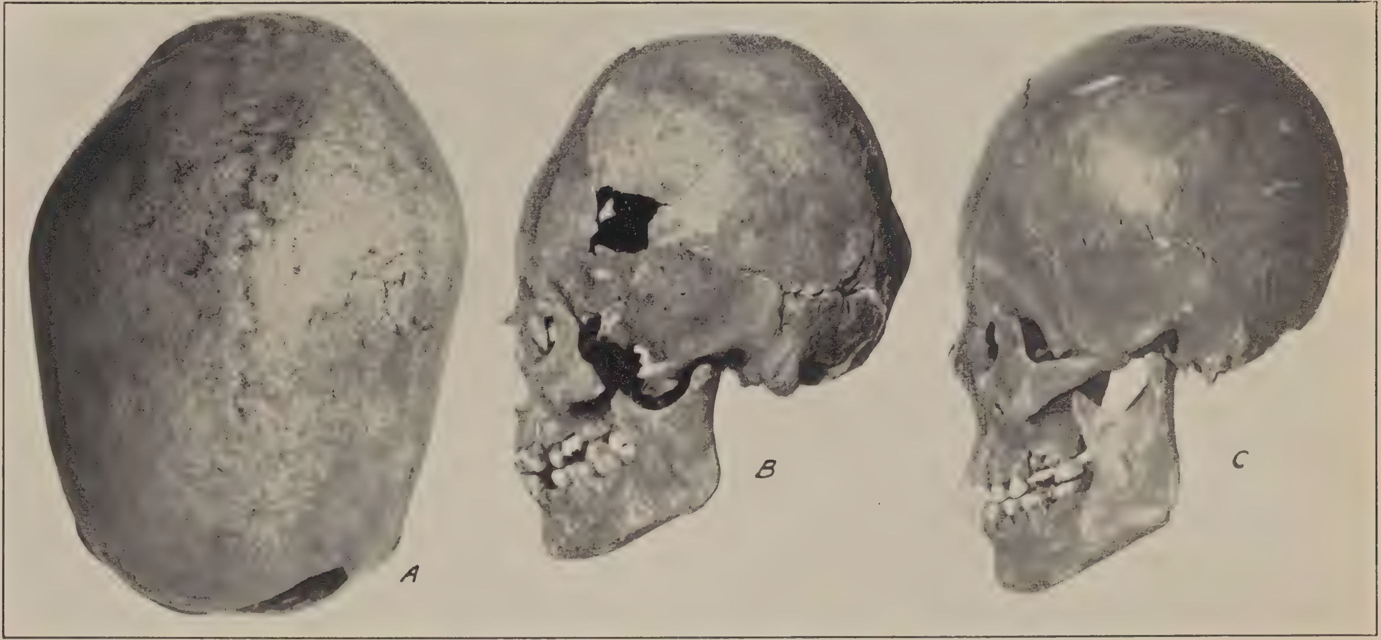
b. Malposed bicuspids, norma basilaris. Site No. 19, Burial No. 5.



a. An asymmetrical skull. Site No. 19, Burial No. 4.



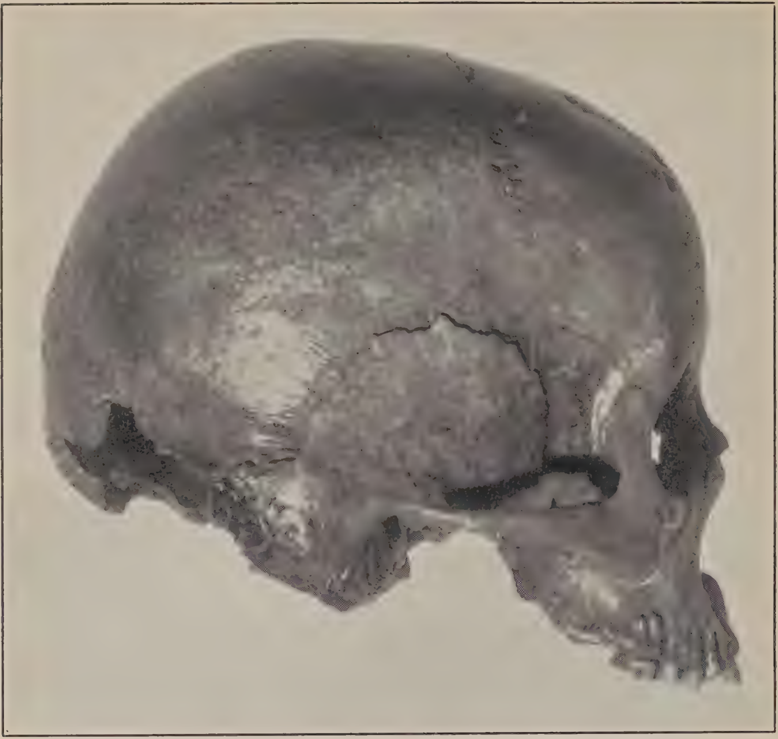
b. Extreme brachycephalism. Site No. 19, Burial No. 21.



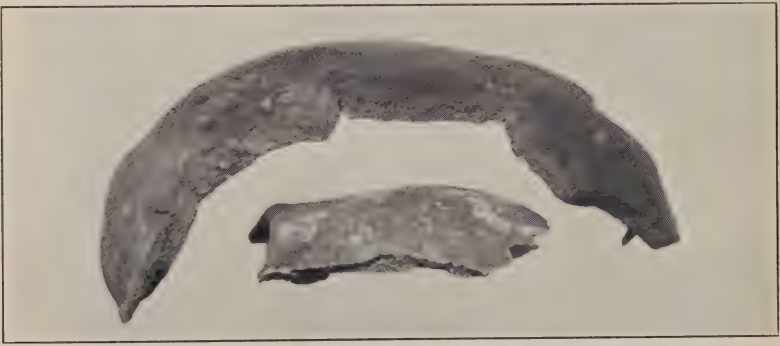
a. A dolichocephalic skull. Site No. 20, Skull No. 13.

b. A case of pyorrhea, norma lateralis. Site No. 19, Burial No. 21.

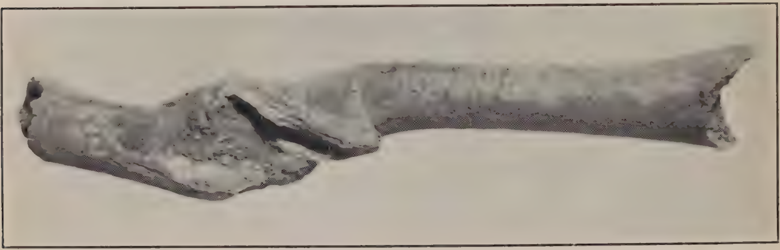
c. Frontal and parietal flattening. Site No. 19, Burial No. 5.



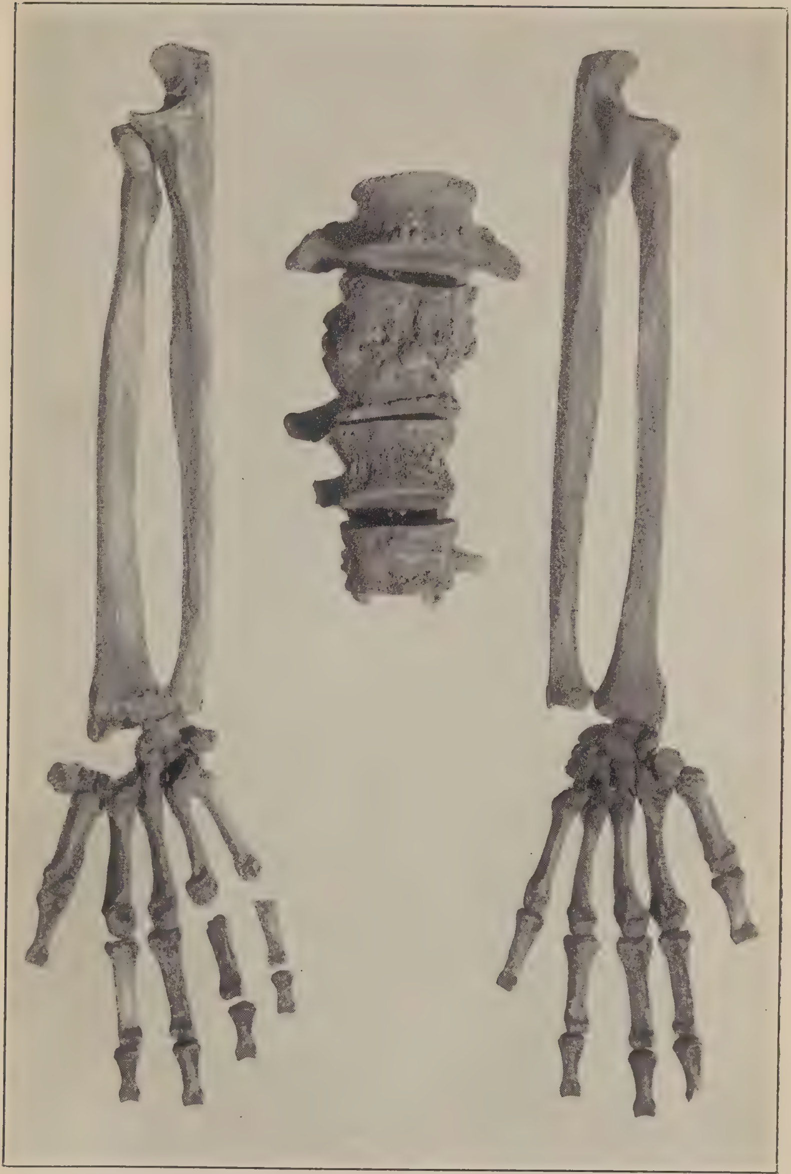
a. A partly burned skull. Site No. 20. Skull No. 14.



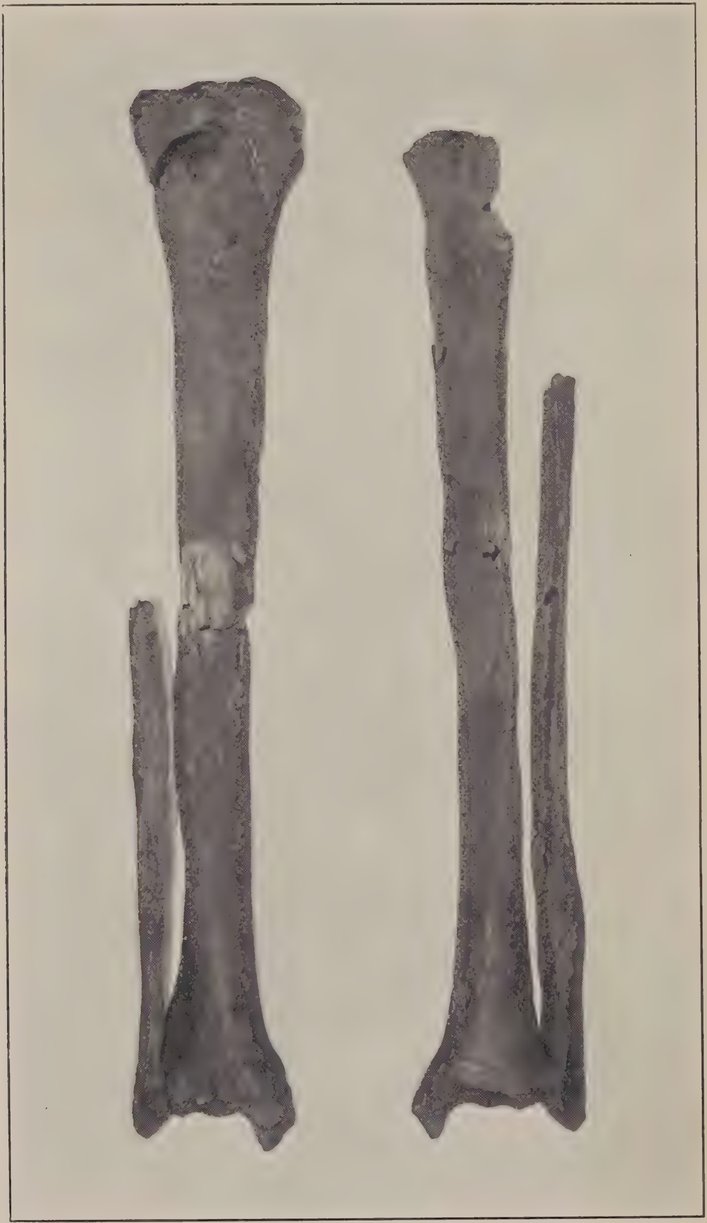
b. Paget's disease of the bone. Site No. 20. Compared with normal skull fragment.



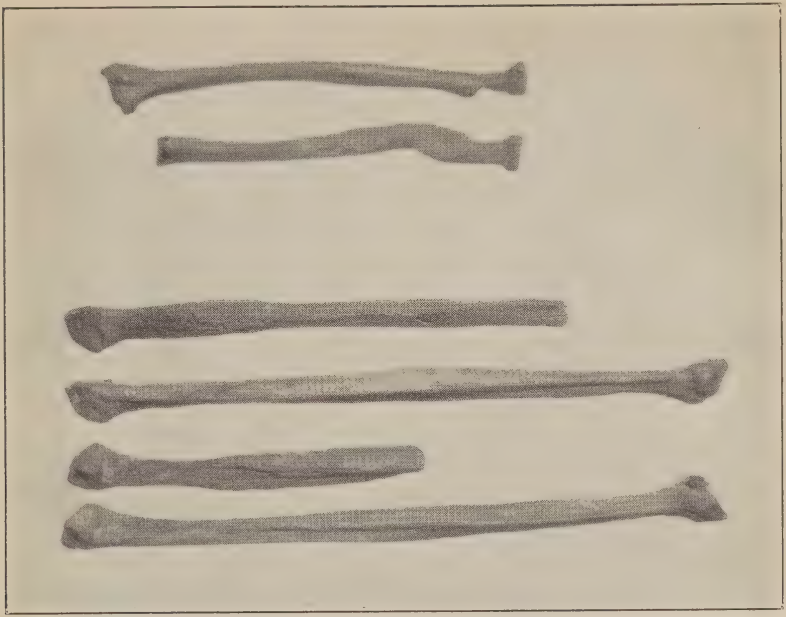
c. Healed fracture with sequestrum cleft. Site No. 22, Burial No. 15.



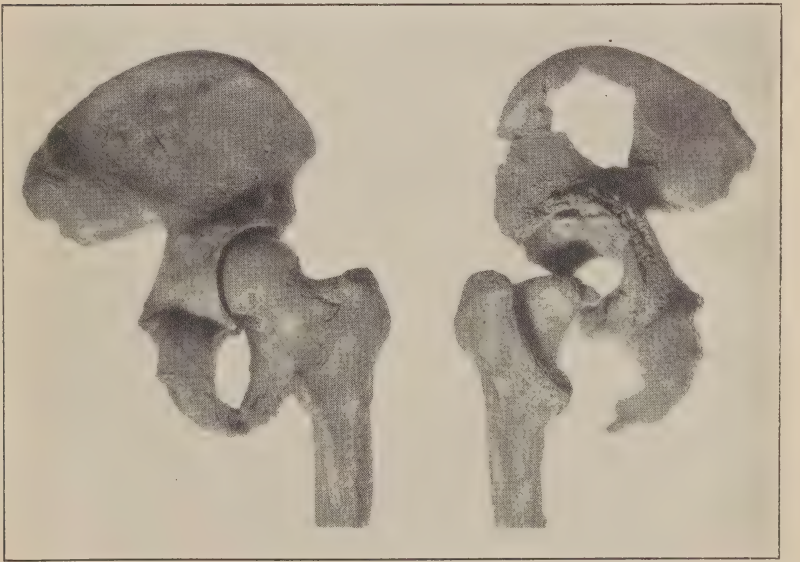
Fused vertebrae and carpals. Site No. 19, Burial No. 4. Normal arm and hand on right.



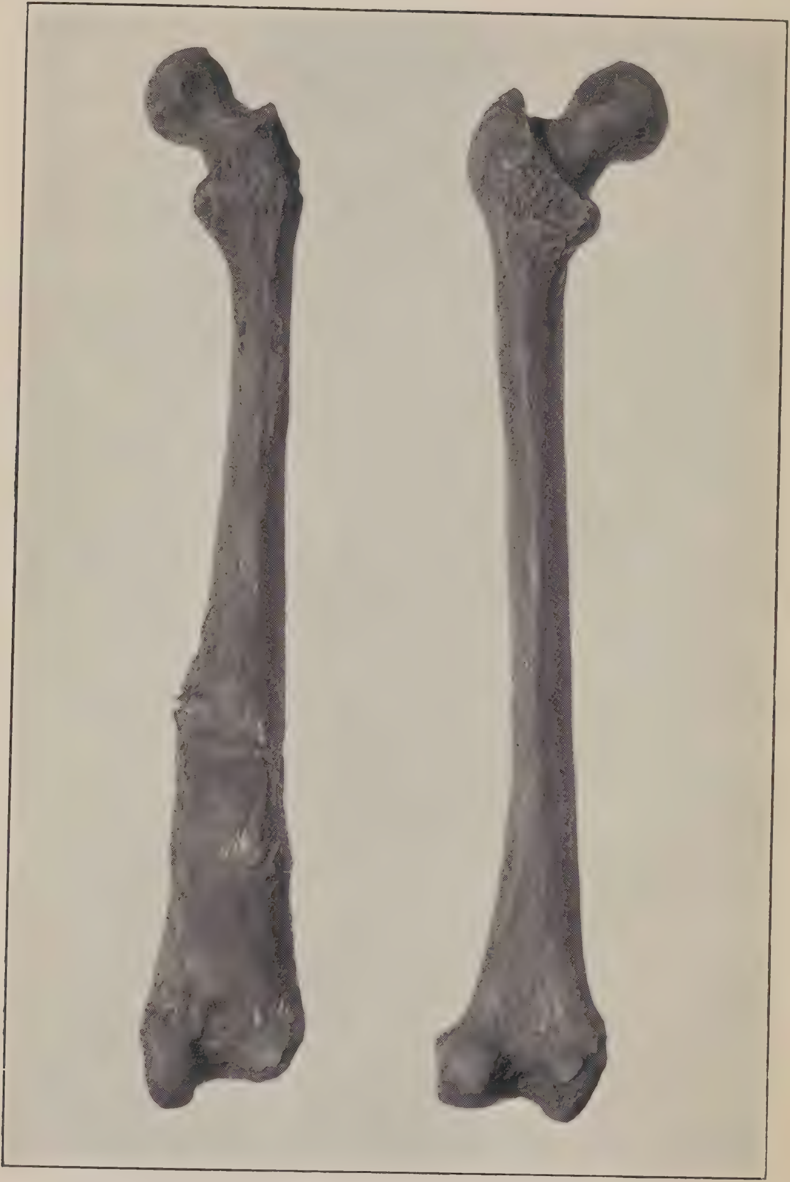
Proliferative periostitis of tibiae and fibulae. Site No. 5, Burial No. 2.



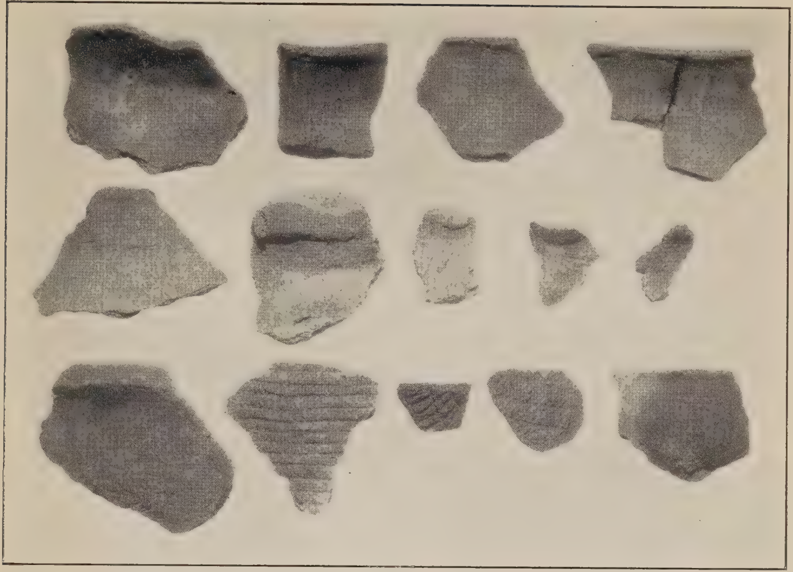
a. Proliferative periostitis of fibulae. Site No. 5, Burial No. 2. Healed fracture of radius. Site No. 19, Burial No. 8.



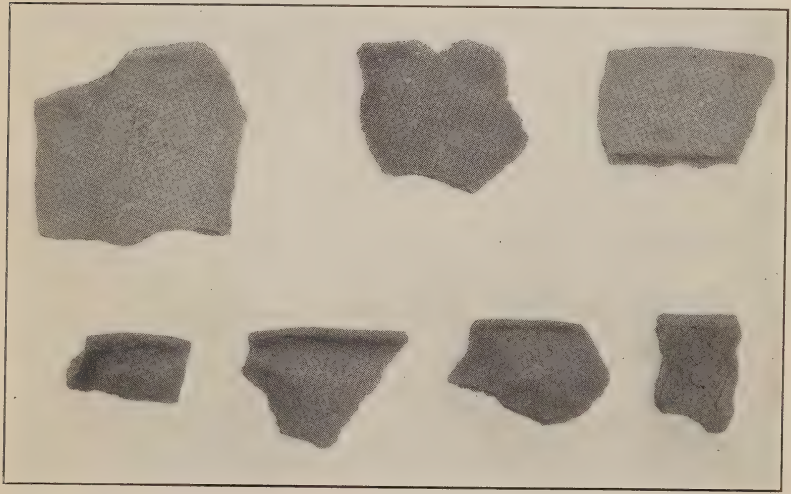
b. Bone destruction in the hip joint. Site No. 19, Burial No. 4. Normal femur and hip on the left.



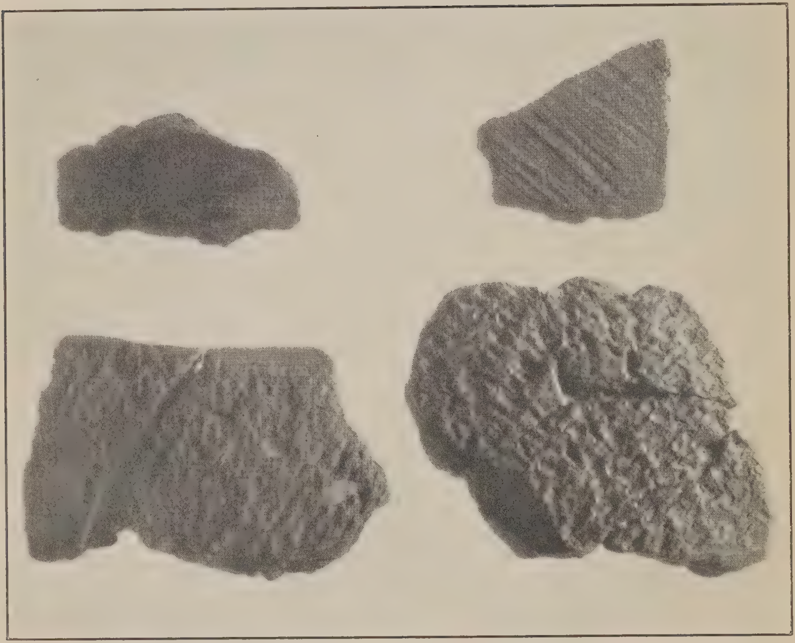
Normal and diseased femora. Site No. 19, Burial No. 14.



a. Sherds from Site No. 9. Sherds 1, 4, 5, 6, 7, and 8 are Nos. 1, 84, 89, 90, 95, and 76 on Chart 33; sherds 2 and 3 are Nos. 4 and 14 on Chart 34; sherd 12 is No. 13 on Chart 35, and sherd 14 is No. 1 on Chart 36. The others are not described on charts.



b. Sherds from Site No. 17. The first six sherds are Nos. 2, 4, 8, 17, 31, and 33 on Chart 38. The last sherd is No. 12 on Chart 39.



Examples of "combed" surface finish and Type II at Site No. 12.

the sherds of which I made a positive impression this weave is clearly shown. The sherds in the Repository are shell tempered and apparently belong to vessels of a jar shape. The sherds in the abovementioned photograph bearing the stamped-paddle design are matched by the two sherds described on Chart XXXVIII and six body sherds. On one of these body sherds the impressions are rectangular, being 0.4 cm by 0.8 cm, while on the others the impressions are those of rectangles 0.3 cm by 0.5 cm. The second sherd in the top row of plate 103, *a*, is evidently this latter type, while the third sherd has a square impression. One shell-tempered sherd of fine texture that appears to have belonged to a bowl-shaped vessel has its outer surface covered with a red paint. The three sherds with the line of closely spaced, shallow, rounded impressions can not be matched by any sherds in the study collection. They are quite obviously atypical of the site. Also without representatives in the collection at hand are the four sherds in the lower right-hand corner that have groups of three-cord impressions on the exterior surface.

Correlation of Pottery Traits

In this concluding section I shall first present a summarized statement of the results of the detailed main body of the report, then the pottery determinants for the Norris Basin will be listed with my impression of the pottery relations of the various sites. Finally, I shall briefly indicate the possible position of the ceramic complex of this area to its nearest known relatives. I find it quite difficult to arrive at satisfactory conclusions in regard to this last problem because of the lack of comparative material in sufficient amount and detail to render these statements any more valuable than speculations.

For the general pottery summary I have used six sites to compare in some detail. These sites are Nos. 11, 10, 19, 5, 9, and 17. Sites Nos. 3 and 12 have already received their summary statement and will be considered again only when the determinants for the sites are listed. Sites Nos. 2 and 4 were pottery paupers and their ceramic relationships will be considered only in the statement indicating the degree of relationship between the various sites.

Since the salt-pan type of vessel was present at all of the valley sites, a chart has been drawn to display graphically the amount of similarity existing. One of the outstanding features of the chart is that it shows that Site No. 19 has a small number of this type of vessel present. Site No. 11 has the largest number of salt pans, both absolutely and relatively. At this site we find that hole temper was not present, that the ware was slightly harder than at any other site, and on the lips of some of the sherds were unusual punctate holes. This last feature appeared at one other site. At Site No. 10 and Site No. 19 hole tempering was either rare or absent; two of the types of weave were absent and, as at Site No. 11, none of the fabrics had been constructed from the large warp-and-weft threads. The last three sites on the chart were very similar. Hole tempering was relatively common, the ware was quite soft, and the large thread imprint was present. The fabric impression, the most interesting feature of these vessels, was common at all of these sites, which is in contrast to its absence on salt-pan sherds in the southern focus of the Fort Ancient Aspect. Plain twine, open weaving occurred at all of the sites and was the most common at all of them. Close plain twining occurred rarely at Sites Nos. 11 and 9 only. The open twilled twining, which gives a zigzag warp impression, was found on sherds from four of the sites and was absent at Sites Nos. 10 and 19. The twilled twining with a close weft was present at all of the sites except Site No. 17, but was not common at any of them.

SALT PANS

Traits	Site No. 11	Site No. 10	Site No. 19	Site No. 5	Site No. 9	Site No. 17
Temper:						
Hole	------	Rare	------	Medium	Abundant	Medium to rare.
Shell	Abundant	Abundant	Present	do	Medium	Abundant.
Texture:						
Medium fine	do	do	do	do	Abundant	Do.
Medium	Medium	Rare	------	Rare	Rare	Rare.
Hardness:						
2	Rare	Abundant	Present	Medium	Abundant	Abundant.
2-2.5	Abundant	do	do	Abundant	Medium	Do.
2.5	Rare	Rare	------	------	------	
Surface finish:						
Fabric impression	Abundant	Abundant	Present	Abundant	Abundant	Do.
Smoothed	Rare	Rare	------	------	Rare	
Fabric impression:						
Plain twine, open weave.	Abundant	Abundant	Present	Abundant	Abundant	Do.
Plain twine, close weave.	Rare	------	------	------	Rare	
Twilled-twine zigzag.	do	------	------	Rare	Medium	Rare.
Twilled twine close	do	Rare	Present?	do	do	
Fabric applied up to lip.	Medium	Abundant	do	Abundant	Abundant	Abundant.
Fabric applied below lip.	do	Rare	------	Rare	Rare	
Large thread imprints.	------	------	------	do	Medium	Medium.
Rims: Incurving	Abundant	Abundant	Present	Abundant	Abundant	Abundant.
Lips:						
Wider than 1.5	do	Medium	------	do	Medium	Medium.
Narrower than 1.5	do	do	------	Medium	Abundant	Abundant.
Flattened	do	do	Present	Abundant	do	Do.
Rounded	do	Abundant	------	do	Medium	Medium.
Narrowed and rounded.	------	Rare	------	Rare	------	
Punctate holes in lip.	Medium	------	------	------	------	

A consideration of the chart giving a summarized statement of characteristics of the bowls at the various sites brings out some interesting points. If Site No. 19 was conspicuous in the preceding chart because of its lack of salt pans, the situation is now reversed because the bowl type of vessel at this site was quite common. Site

No. 17 did not have many bowl shapes. Hole tempering was rare at Sites Nos. 11, 10, and 5, was absent at 19, and quite common at 9. Partially because of this the bowls at Site No. 19 were the hardest of any of the sites. The only site at which the tempering was fine to any noticeable degree was at Site No. 5. In connection with the prevalence of cord-wrapped paddling at Site No. 11 we find that the bowls in an appreciable number of cases have traces of this type of surface finishing appearing as the result of imperfect smoothing. The same condition is true, but to a less degree, at Sites Nos. 10 and 19. Decoration was most common at Sites Nos. 11 and 19, where the majority of bowls were found. The incising consisted of widely spaced, parallel, predominantly horizontal lines extending but a short distance below the lip. The notched or beaded rim strip and the horizontal rim lug occur at both sites on bowls. The latter trait is more common at Site No. 19. Some of the vessels of this shape at Site No. 11 have the rim or nodes or bosses about the rim as on one of the jar shapes. This feature is present to a noticeable degree at Site No. 10 and occurs rarely at Site No. 9. Site No. 19 is also distinguishable from the other sites grouped in this chart because of the large percentage of lips that are flattened and rounded. Sites Nos. 10 and 11 are similar in their relative high frequency of lips that are narrowed and rounded. This trait is rare at the other sites.

BOWLS

Traits	Site No. 11	Site No. 10	Site No. 19	Site No. 5	Site No. 9	Site No. 17
Temper:						
Hole	Rare	Rare		Rare	Medium	(1)
Shell	Abundant	Abundant	Abundant	Abundant	Abundant	
Texture:						
Fine	Rare	Rare		do		
Medium fine	Abundant	Abundant	Abundant	Medium	Abundant	
Hardness:						
2	Medium	Medium		Abundant	Rare	
2–2.5	Abundant	Abundant	Abundant	Rare	Abundant	
2.5	Rare		Rare			
Surface finish:						
Smooth	do					
Smoothed		Abundant	Abundant	Abundant	Abundant	
Cord wrapped						
Paddle and smoothed.	Abundant	Rare	Rare			
Decoration:						
Incising	Rare		do			
Notched rim strip	Medium		Medium		Rare	
Horizontal rim lugs	Rare		do		do	
Rim nodes	Medium	Medium			do	
Small incised circles in horizontal rows.			Rare			
Rim:						
Incurving	Abundant	Abundant	Abundant	Abundant	Abundant	
Straight-angled	Rare					
Lip:						
Narrowed and rounded.	Medium	Medium	Rare		Rare	
Rounded	do	Abundant	do	Medium	Abundant	
Flattened and rounded.	do	Medium	Abundant	do	do	

---

[1] Bowls rare at this site.

Instead of preparing charts to show the characteristics of the following three types of vessels and their presence or absence at the six sites, I shall rely on a short verbal description, since the types are only found at one or two sites.

Pointed-rim jars.—One of the common jar types at Site No. 11 is present but rare at Site No. 10. Sites Nos. 19, 5, and 9 each have one sherd and there are no recognizable fragments at Site No. 17. The tempering material is crushed shell and the shell particles were distintegrated in only a few of the sherds. The texture is medium fine and the hardness is 2, or 2–2.5. A few of the sherds were as hard as 2.5. While the upper portion of the rim, especially, and the rim generally, was smoothed, the body was finished with a cord-wrapped paddle. Many of the sherds show the effect of subsequent smoothing. In connection with and just below the raised portion of the rim, a number of different types of decoration appear. Most commonly the node was rounded, but occasionally was horizontal or perpendicular. One rim of this type almost certainly had a loop handle in place of the usual node.

The rim most commonly has four raised points and the mouth is squared. A few of the sherds indicate that the rim had two raised points instead of the more common number. Most of the sherds had an upper rim strip that was noticeably thicker than the rim immediately below it. This band is not as pronounced nor does it extend down the rim as far as on some of the other jar shapes. The rim is either straight or slightly flaring and is usually short. The lip is either narrowed and rounded, or rounded. None of them were flattened and rounded. The vessels are short and of medium size.

Wide-mouth jars with rim bosses.—This well-defined type has practically the same distribution as the pointed-rim jars. Almost all of them are shell tempered, and the texture is medium fine with a few sherds being medium. The hardness is predominantly 2–2.5 with a few sherds being either softer or harder by a half point. Practically all of the outer rim surface is smoothed but the shoulder or upper body area and the body was malleated with the cord-wrapped paddle. Many of the sherds show some evidence of subsequent smoothing but the majority still bore distinct traces of the cord imprint.

The determining feature of this type of jar is the row of bosses about the outer rim. These bosses or teats were located a short distance below the lip and were rarely coextensive with it. They are grouped closely together and the horizontal length of three of them varied on the different vessels, from 3 to 5 cm. On some of the sherds the individual bosses seem to have been attached to the rim as separate pieces of clay, while on other sherds the bosses were shaped from an added rim band. The rim is rather short, usually straight, and is only rarely slightly flaring. The lip is most commonly narrowed and rounded, or rounded, and is only rarely flattened and rounded. The upper body or shoulder is long and slopes gradually to the rim.

Jar-shape A.—This well-defined jar shape was quite common at Site No. 11 and fairly common at Site No. 10. It was absent at Sites Nos. 17 and 19, and there was one sherd present at Site No. 5. A few sherds at Site No. 9 were obviously atypical at that site in most of their characteristics. The tempering is shell and the texture medium fine, with a few sherds at Site No. 11 having a medium texture. The sherds from Site No. 10 are a trifle softer than those from Site No. 11. The great majority are either 2 or 2–2.5 in hardness. The rim on many of the sherds is smoothed, and in some cases the previous treatment with a cord-wrapped paddle is still visible. The body surface of the majority of the specimens from Site No. 11 are cord marked with a minority showing subsequent smoothing. At Site No. 10, however, while there was a considerable proportion that showed the cord marks clearly, or partly obliterated, many of them were smoothed.

This vessel has a long sloping shoulder area which merges rather gradually into a straight or slightly flaring rim. The upper portion of the inner rim has been angled outward so that it is almost horizontal and the lip almost perpendicular. This change in direction of the rim is well marked on the inner surface where there is a distinct edge between the perpendicular and horizontal surfaces. The outside wall of the rim has, however, been thickened and the change in direction is partially obscured by the gradualness of the change. It would have been difficult to have separated this jar from the more common type by an examination of the outer surfaces alone. An added outer rim strip or band from 1.5 to 2.5 cm in height was common on vessels of this type. The lip was commonly narrowed and rounded, or rounded, and was only rarely flattened and rounded.

Since the jar or pot shape is common at all six of the sites, I have prepared a chart to show the main characteristics at each of the sites of the jars present. The comparative rarity of hole-tempered vessels at Sites Nos. 11, 10, and 19 is again emphasized. There are a few obviously atypical grit-tempered sherds at Site No. 19, but at Site No. 17 a sizable minority of typical sherds have grit temper. The texture of all of the sites is overwhelmingly medium fine, with a few sherds having fine and medium texture. At Sites Nos. 11 and 19 there were rare sherds with coarse texture. The jars at Site No. 11 were a trifle harder than at the other sites, but almost all of the vessels are between 2 and 2.5 in hardness. At Site No. 11, and to a lesser degree at Site No. 10, the jars are clearly cord marked, while at the other sites this type of surface finish has been obliterated with the subsequent smoothing. This feature, then, has been uniform on all of the jar types at these six sites. The rims are commonly straight or slightly flaring and the flaring rim is rare. There is a distinct angle between the shoulder area and the rim on a significant number of the jars at Site No. 11 and to a lesser degree at Site No. 10. At Site No. 5 it occurs rarely and is absent at the other sites. The flattened and rounded lip is very common at Sites Nos. 19, 5, 9, and 17, occurs less frequently at Site No. 10, and is not typical at Site No. 11. The narrowed and rounded lip frequently occurs at all of the sites, and the rounded lip is abundant at all of them.

JAR-SHAPE B

Traits	Site No. 11	Site No. 10	Site No. 19	Site No. 5	Site No. 9	Site No. 17
Temper:						
Hole	Rare	Medium	Rare	Abundant	Abundant	Medium.
Shell	Abundant	Abundant	Abundant	do	do	Do.
Grit			Rare			Do.
Texture:						
Fine	Rare	Rare	do	Rare	Rare	Rare.
Medium fine	Abundant	Abundant	Abundant	Abundant	Abundant	Abundant.
Medium	Rare	Rare	Rare		Rare	Rare.
Coarse	do		do			
Hardness:						
2	Medium	Abundant	Abundant	Abundant	Abundant	Abundant
2–2.5	Abundant	do	do	do	do	Do.
2.5	Rare	Rare			Rare	Rare.
3					do	
Surface finish:						
Cord-wrapped paddle.	Abundant	Rare			do	
Cord-wrapped paddle and smoothed.	Medium to rare.	Medium	Rare	Rare	do	
Smoothed	do	Abundant	Abundant	Abundant	Abundant	Abundant.
Rims:						
Straight	Abundant	do	do	do	do	Do.
Slightly flaring	do	Medium	Medium	do	Medium	Medium.
Flaring	Rare	Rare		Rare	Rare	Rare.
Angled	Medium to rare.	do		do		
Added outer rim strip.	do	Abundant		do	Rare	
Lip:						
Narrowed and rounded.	Medium	Medium	Medium	Medium to rare.	do	Medium.
Rounded	Abundant	Abundant	Abundant	Abundant	Abundant	Do.
Flattened and rounded.	Medium to rare.	Medium	do	do	do	Do.
Flattened	Rare					

A chart has been prepared to show the characteristics of the sherds bearing lugs at the different sites. They were not common at Sites Nos. 5, 9, and 17. One would have difficulty separating the lugs from Sites Nos. 10 and 11, but those at Site No. 19 are fairly distinct from the ones at the former sites because of their proportionately greater length. Site No. 11 had a number of small round lugs and a semicircular lug, vaguely reminiscent of the Fort Ancient type. Most of the lugs are horizontal, from 2 to 6 cm in length, and are attached either to the lip or just below the lip. The other characteristics of the sherds to which lugs were attached are similar to those of the common jar shape. There were no handles of any kind on jar-shape A.

RIM SHERDS WITH LUGS

Traits	Site No. 11	Site No. 10	Site No. 19	Site No. 5	Site No. 9	Site No. 17
Temper:						
Hole	Rare	Medium	Rare	(1)	(2)	(2)
Shell	Abundant	Abundant	Abundant			
Texture:						
Fine	Rare					
Medium fine	Abundant	Abundant	Abundant			
Medium	Medium to rare.	Rare	Rare			
Hardness:						
2	do	Abundant	do			
2–2.5	Medium	do	Abundant			
2.5	Medium to rare.	Rare	do			
Surface finish:						
Cord-wrapped paddle	Abundant					
Cord-wrapped paddle and smoothed.	Medium	Medium	Rare			
Smoothed		Abundant	Abundant			
Lugs:						
Small round	Rare					
Horizontal	Abundant	Abundant	Abundant			
2 to 6 cm long	do	do	do			
Attached to lip	do	do	do			
Attached below lip	do	do	do			
Semicircular	Rare					
Rims:						
Straight	Abundant	Abundant	Abundant			
Slightly flaring	Medium	Rare	Rare			
Lips:						
Narrowed and rounded	do	Medium	do			
Rounded	do	do	Abundant			
Flattened and rounded	do	do	do			

[1] No lug handles at this site.
[2] Lug handles rare at this site.

A glance at the chart describing those sherds possessing loop or strap handles will bring clearly to mind some of the easily identifiable differences in the pottery complexes at the six sites. There are a few loop handles at Site No. 17 which in the recognizable cases projected above the lip. Loop handles are quite rare at Site No. 19. Three specimens occur at Site No. 10 and while fairly common at Site No. 11 are attached to the lip and almost never have a portion projecting above the lip. They are rarely decorated at this site and are usually round in cross section. At Site No. 9 the loop handle received an exuberant development. They are round or oval in cross section and while decoration on the body of the handle is not common, a distinctive projection above the lip received varied treatment. This projecting knob was sometimes button shaped, in other cases it was broadened and flattened, and in still others it was bifurcated with two button-shaped horns. While a significant trait of these handles is the portion which projects above the lip, the majority of loop handles at Site No. 9 did not do so, but terminated at the lip. The handle complex at Site No. 5 is very similar to that at Site No. 9.

An examination of the strap handles also helps to emphasize the differences between the sites. At Sites Nos. 5, 9, 17, and strangely

Site No. 10, handles of this type are practically nonexistent. At Sites Nos. 11 and 19, however, they are a very important part of the ceramic picture. The strap handles are placed on the common jar shape, which differs at the two sites, as has been explained before. Some of the handles were attached below the lip at Site No. 11, while all of the handles at Site No. 19 were attached to the lip.

LOOP AND STRAP HANDLES

Traits	Site No. 11	Site No. 10	Site No. 19	Site No. 5	Site No. 9	Site No. 17
Temper:						
Hole	Rare	(1)	Rare	Abundant	Abundant	(2)
Shell	Abundant		Abundant	Medium	do.	
Texture:						
Medium fine	do.		do.	Abundant	do.	
Medium	Rare					
Hardness:						
2	Medium to rare.			Abundant	Abundant	
2–2.5	Abundant		Abundant	Medium to rare.	do.	
2.5	Medium to rare.		Medium	Rare	Rare	
Surface finish:						
Cord-wrapped paddle	Medium		Rare			
Cord-wrapped paddle and smoothed.	do.					
Smoothed	do.		Abundant		Abundant	
Loop handles:						
Attached to lip	Abundant			Medium	do.	
Project above lip	Rare			Abundant	do.	
Round	Abundant			do.	do.	Medium.
Oval	Medium to rare.			do.	do.	Do.
Bifurcated at lip	Rare			Rare	Rare	
Decorated	do.			do.	do.	
Large broad knob				Medium	Common	
Bifurcated above lip				Rare	do.	
Button knob above lip.					do.	
Strap handles:						
Attached to lip	Abundant		Abundant			
Attached below lip	Rare					
Decorated	do.		Rare			
Converging sides			do.			
Straight sides			do.			
Rim:						
Straight	Medium				Abundant	
Slightly flaring	do.				Medium	
Flaring	do.					
Lip:						
Narrowed and rounded.	Rare				Rare	
Rounded	Abundant				Medium	
Flattened and rounded.	Rare				Abundant	

[1] Only three loop and no strap handles present.
[2] Present but not common.

At Site No. 19 some of the handles had sides which converged from the lip to the shoulder attachment and in that feature tended toward the common Fort Ancient type of strap handle. The sherds in the Ceramic Repository indicate that the average handle at Site No. 19 is larger than at Site No. 11. Furthermore, at the former site it is often associated with a frog effigy vessel—a type that is completely absent at the latter site.

MISCELLANEOUS TRAITS

In this list are found pottery determinants that are rare at most of the sites and that are characteristic of other cultural groups in the Southeast. Unfortunately most of these traits have not been accurately defined as to geographical distribution or cultural association.

Grit tempered-grilled stamp surface finish:
  Sites Nos. 11, 19, 9, and 17.
  This type has been found to be present in the cave sites discussed in this report and is widespread over the Southeast.
Shell tempered-diamond design stamped surface finish:
  Sites Nos. 11 and 10.
  Probably closely connected with the above group. It almost certainly has a more limited distribution.
Brushed or combed surface finish-grit or limestone tempering:
  Sites Nos. 19 and 9.
  The occurrence of this variety of surface finish has been discussed in the section on the cave sites.
Simple plaited or plain twine impression-grit tempered sherds:
  Sites Nos. 19 and 5.
  The section on the cave sites contains a discussion of this type of pot.
Vessels with red paint on exterior:
  Sites Nos. 11, 10, 9, and 17.
  Unfortunately the presence of this type is so rare and the pieces so small that little can be done with this trait save to record its presence and to look perhaps to the west for its source.
Incised rectilinear and curvilinear lines on bowls:
  Sites Nos. 11 and 19.
  This design motif is reminiscent of the Cazuela type bowl and the decoration on some bowls in the Tennessee-Cumberland wares. What appears to me to be a very similar type is illustrated by Moore[1] as coming from the Georgia coast.
Small punctate impressions and curvilinear lines on small open-mouth jars:
  Sites Nos. 11 and 19.
  The closest association of this decorative technique is probably with the Tennessee-Cumberland group.
Punctate impressions on jars:
  Site No. 17.
  Probably connected with the trait just considered, its relationship is undoubtedly the same.
Raised circles on shoulder area of short-rim jars:
  Site No. 11.
  A vessel of this type was found by Harrington[2] farther south along the Tennessee River and it also occurs in the Tennessee-Cumberland group.
Outer rim flange on large open-mouth jars:
  Site No. 11.
  This is the second sherd in the third row of plate 77, *a*. The distribution of this characteristic is unknown to me.

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[1] Moore, 1897, pl. XIII.

[2] Harrington, 1922, pl. LIII.

Notched curvilinear bands of clay on outer rim of jars:
  Site No. 19.
  This trait is uncommon, to my knowledge.
Human effigy faces:
  Site no. 11.
  The type of effigy shown on plate 81, *a*, is limited to Site 11. Another variety of human effigy appears on the last two sherds of the first row of plate 118, *a*, and this variety is limited to Site 19.
Bird effigies on bowls:
  Sites Nos. 11 and 9.
  This feature is fairly widespread in the Southeast and the absence of the trait is almost more significant than its presence. It is much more common at Site 11 than at Site 9, where it is rare.
Frog effigy vessels:
  Site No. 19.
  This type of effigy is widespread throughout the Southeast but occurs only at this site in the Norris Basin.
Pottery discs:
  Sites Nos. 11 and 9.
  The limited distribution of this artifact is also rather unusual.
Steatite vessel fragments:
  Sites Nos. 5 and 9.
  Harrington found this type of vessel in the graves of his Round Grave people and none in his "Cherokee" deposits.

The listing of the pottery determinants shows very clearly the resemblances and differences among the sites. The lists for the salt pans and bowls can be considered as the pottery determinants for those types of vessels. In a final chart I have attempted to group together all of the traits present on the jar-shaped vessels. By comparing the determinants of the valley sites with those listed for the cave sites it will at once be seen that the two groups have very little in common except that in both pottery is used as a container. After having worked with this study for a period of six months I have the definite feeling that some of the valley sites are more closely related to one or two of the others than they are to the whole group. Even though the basic pottery characteristics are more or less similar it is not difficult to divide the sites from a ceramic standpoint into three rather distinct groups.

POTTERY DETERMINANTS FOR JAR-SHAPED VESSELS

Traits	Site No. 11	Site No. 10	Site No. 19	Site No. 5	Site No. 9	Site No. 17
Temper:						
Hole	Rare	Medium	Rare	Abundant	Abundant	Medium.
Shell	Abundant	Abundant	Abundant	do	do	Abundant.
Grit			Rare			Medium.
Texture:						
Fine	Rare	Rare	do	Rare	Rare	Rare.
Medium fine	Abundant	Abundant	Abundant	Abundant	Abundant	Abundant.
Medium	Medium to rare.	Rare	Rare		Rare	Rare.
Coarse	Rare		do			
Hardness:						
2	Medium	Abundant	Abundant	Abundant	Abundant	Abundant.
2-2.5	Abundant	do	do	do	do	Do.
2.5	Medium		Rare	Rare	Rare	Rare.
Surface finish:						
Cord-wrapped paddle.	Abundant	Medium				
Cord-wrapped paddle and smoothed.	Medium	Abundant	Rare	Rare	Rare	
Smoothed	Rare	do	Abundant	Abundant	Abundant	Abundant.
Smooth			Medium			
Lug handles					Rare	Rare.
Small round	Rare					
Horizontal	Abundant	Abundant	Abundant			
Attached to lip	do	do	do			
Attached below lip	do	do	do			
Semicircular	Rare					
Rim bosses		Rare			Rare	
Below lip	Abundant					
Joined to lip	Rare					
Added rim strip	do					
Formed from body clay.	Abundant					
Pointed rim vessels		Rare		Rare	Rare	
Round node below point.	Abundant					
Horizontal node below point.	Rare					
Perpendicular node below point.	do					
Loop handle	do					
Loop handles		Rare	Rare			
Attached to lip	Abundant			Medium	Abundant	
Project above lip	Rare			Abundant	do	
Round	Abundant			do	do	Medium
Oval	Medium to rare.			do	do	Do.
Handle body decorated.	Rare			Rare	Rare	
Bifurcated at lip	do			do	do	
Bifurcated above lip				do	Medium	
Large broad knob				Medium	do	
Button knob above lip.					do	
Strap handles:						
Attached to lip	Abundant		Abundant			
Attached below lip	Rare					
Decorated	do		Rare			
Converging sides			do			
Straight sides	Abundant		Abundant			
Rim shape:						
Round mouth	do	Abundant	do	Abundant	Abundant	Abundant.
Two points, oval mouth.	Rare					
Four points, square mouth.	Medium					
Added rim strip	Abundant	Abundant		Rare	Rare	
Angle between rim and shoulder.	Medium to rare.	Rare		do		
Straight	Abundant	Abundant	Abundant	Abundant	Abundant	Do.
Slightly flaring	do	Medium	Medium	do	Medium	Medium.
Flaring	Medium to rare.	Rare				
Lip shape:						
Narrowed and rounded.	Medium	Medium	Medium	Rare	Rare	Do.
Rounded	Abundant	Abundant	Abundant	Abundant	Abundant	Do.
Flattened and rounded.	Rare	Rare	do	do	do	Do.

I would say that Sites Nos. 11 and 10 would fall into one group in spite of the fact that Site No. 11 is much richer ceramically than is Site No. 10. The similarity is quite marked. Site No. 19, I feel, is distinct enough from this first group and from the third group to be considered as an unique site. Sites Nos. 5, 9, and 17 can be classed together, and on the basis of the small amount of material available Sites Nos. 2 and 4 also belong to this third division. I believe that the charts and the determinants listed show the same relationships. They are an attempt to express objectively, and make available for comparative research, the ceramic picture at these sites from the Norris Basin.

The listing of the detailed characteristics of the various types of vessels shows the relationships of which I have spoken in the foregoing paragraph. To simplify the site-by-site comparison, I have prepared a percentage relationship of the principal types of vessels at each of the components. This analysis brings out the main points of similarities and differences. At the cave sites we find that while sherds with a net impression comprise 18.8 percent of the total at Site No. 12, they are absent at Site No. 3. On the other hand, Site No. 3 has the grilled stamp design on 35.5 percent of the sherds found there, but this design is grouped under the miscellaneous heading at Site No. 12.

One of the major distinctions between Sites Nos. 11, 10, and 19, and Sites Nos. 5, 9, and 17, is that the first group has a preponderance of lug handles, while the second group has a majority of loop handles. While the salt pan was not absent at Site No. 19 it was so rare that it does not figure in this general presentation of the major types, nor were bowls completely absent at Site No. 17. Jars with pointed rims, and those with rim bosses only figure prominently at Site No. 11. Jar-type A is conspicuous at Sites Nos. 11 and 10. This final tabulation is of value only in a general way. From it one could not hope to accurately compare the ceramic complexes.

PERCENTAGE RELATIONSHIPS OF THE CERAMIC TYPES AT THE CAVE SITES

SITE NO. 3

	Number of sherds	Percent of total
Type I.—Surface tooled with cord-wrapped paddle	21	13. 5
Type II.—Grilled stamp design	55	35. 5
Type III.—Textile impression	40	26. 0
Miscellaneous	39	25. 0
	155	100. 0

SITE NO. 12

Type I.—Surface tooled with cord-wrapped paddle	28	18.8
Type II.—Net impression (?) on surface	28	18.8
Type III.—Textile impression	40	26.9
Miscellaneous	53	35.5
	149	100.0

PERCENTAGE RELATIONSHIP OF THE MAJOR TYPES OF VESSELS AT THE VALLEY SITES

Major types of vessels present	Site No. 11		Site No. 10		Site No. 19		Site No. 5		Site No. 9		Site No. 17	
	Number of sherds	Percent of total	Number of sherds	Percent of total	Number of sherds	Percent of total	Number of sherds	Percent of total	Number of sherds	Percent of total	Number of sherds	Percent of total
Salt pans	80	17.8	30	19.6	------	------	15	10.5	25	7.4	14	22.2
Bowls	17	3.7	9	5.9	27	23.1	9	6.4	10	3.0	------	------
Jars with pointed rims	17	3.7	------	------	------	------	------	------	------	------	------	------
Jars with rim bosses	32	7.1	------	------	------	------	------	------	2	.6	------	------
Jar-type A	89	19.7	20	13.1	------	------	4	2.8	2	.6	------	------
Jar-type B	129	28.6	74	48.3	34	29.3	76	54.0	198	59.1	49	77.8
Jar-type B with strap handles	16	3.5	------	------	13	11.2	------	------	1	.3	------	------
Jar-type B with loop handles	20	4.4	------	------	1	.9	37	26.3	85	25.4	------	------
Jar-type B with lug handles	52	11.5	20	13.1	41	35.5	------	------	12	3.6	------	------
Total	452	100.0	153	100.0	116	100.0	141	100.0	335	100.0	63	100.0

As was stated at the beginning of this concluding section, it is rather difficult to compare the pottery on which this report was based with the data available in many of the earlier reports. Certainly the closest resemblances with which the writer is familiar can be found in the pottery remains from the upper Tennessee River that have been called "Cherokee." There are, however, quite a number of differences, namely, the decoration of the jar shapes, the much more common effigy vessels, and the addition of new pottery types such as the water bottle, which prompt me to forbear making any generalization until that material can be examined in detail. Excavation by Tennessee Valley Authority workers in northern Alabama along the Tennessee River has brought to light at a number of sites pottery which almost certainly can be related to the valley sites in the Norris Basin. The writer feels that the rather loosely defined Tennessee-Cumberland "culture" is the next logical area to examine if one is to seek for ceramic cousins. Quite a distance away, both geographically and from the pottery standpoint, are those sites in western Kentucky, excavated by the University of Kentucky, which resemble the Tennessee-Cumberland area. The Fort Ancient Aspect is about equally removed along another line. My hesitancy about attempting to place the Norris Basin in the Southeastern cultural picture is due to my unfortunate lack of familiarity with that area. At present I cannot see that these sites have much in common with such well-known sites as Nacoochee, Etowah, or Moundville. Time and further study will remedy this defect.

GLOSSARY OF ABBREVIATIONS USED IN CHARTS

P	Paddled.	Cry	Cryolite.
P & S	Paddled and smoothed.	Sta	Stamped.
CWP	Cord-wrapped paddle.	Sm. or S	Smoothed.
SBI	Smoke-blackened interior.	N & R	Narrowed and rounded.
SBE	Smoke-blackened exterior.	F & R	Flattened and rounded.
F	Fine.	Sl. Fl	Slightly flaring.
MF	Medium fine.	Fl	Flaring.
C	Coarse.	Ang	Angled.
MC	Medium coarse.	Lat	Lateral.
T or TE	Textile.	F to B	Front to back.
T & S	Textile and smoothed.	Sh	Shoulder.
Str	Striated.	O. R. S	Outer rim strip.
St	Straight.	G	Grit temper.
L	Limestone.	H	Hole temper.
Q	Quartz.	S	Shell temper.
O	Other forms of grit.		

CHART I.—SITE NO. 3, TYPE I—TOOLED WITH CORD-WRAPPED PADDLE

	Grit			Hardness				Surface finish	Color		Texture					Thickness
	L	Q	O	2-2.5	2.5	3	4	CWP	SBI	SBE	F	MF	M	MC	C	
																cm
1	----	----	X	----	----	X	----	X	X	0	----	----	----	X	----	0.65
2	----	X	----	----	----	X	----	X	0	X	----	----	X	----	----	.45-0.7
3	----	----	X	----	----	----	X	X	0	0	X	----	----	----	----	.9-.7
4	X	----	----	----	X	----	----	X	0	0	----	X	----	----	----	.5-.7
5	X	----	----	----	X	----	----	X	0	X	----	----	X	----	----	.7
6	----	X	----	----	X	----	----	X	0	X	----	----	----	X	----	.8
7	----	X	----	----	X	----	----	X	0	X	----	----	----	X	----	.9
8	----	X	----	----	----	----	X	X	X	0	----	----	----	X	----	.9
9	----	----	X	----	----	----	X	X	X	0	----	----	----	X	----	.8
10	----	----	X	----	X	----	----	X	X	0	----	----	X	----	----	.8
11	X	----	X	----	X	----	----	X	0	0	----	----	----	----	X	1.0
12	X	----	----	X	----	----	----	X	0	X	----	----	----	X	----	.7
13	----	----	X	----	X	----	----	X	X	0	----	----	----	X	----	1.0
14	----	----	X	----	X	----	----	X	0	0	----	----	X	----	----	.6
15	----	X	----	X	----	----	----	X	X	0	----	----	X	----	----	.8
16	X	----	----	X	----	----	----	X	0	0	----	----	X	----	----	.6
17	X	----	----	X	----	----	----	X	0	0	----	----	X	----	----	.7
18	X	----	----	----	X	----	----	X	X	X	----	----	----	X	----	.8
19	----	----	X	----	X	----	----	X	0	0	----	----	----	----	X	1.1
20	----	----	X	----	X	----	----	X	0	0	----	----	----	----	X	1.1
21	----	----	X	X	----	----	----	X	0	0	----	----	X	----	----	.5-.7
	7	5	10	5	11	2	3	21	7	6	1	1	8	8	3	------

Line:
1. Six sherds—temper looks like slate.
2. Narrow flattened lip—paddling to lip.
3. Lip rounded—some cord markings on the lip.
4. Rounded and slightly flattened lip.
8. Brownish gray.
11. Sun tan—grayish tan.

CHART II.—SITE NO. 3, TYPE II—GRILLED STAMP DESIGN

[Museum catalog No. 6430]

	Grit		Hardness						Surface finish		Texture				Color		Thickness	Grilled impressions
	L	O	2-2.5	2.5	2.5-3	3	3.5	4	P	P&S	F	MF	M	MC	SBI	SBE		
																	cm	*cm*
1	×			×						×				×	×	0	0.5	0.3
2	×			×					×				×		×	0	.65	.3
3	×			×						×			×		×	0	.6	.25 x .35
4	×			×						×			×		0	0	.9	
5	×					×				×			×		×	×	.7	
6	×			×						×			×		×	0	.7	.5 x .5
7	×							×		×			×		0	0	.5	
8		×		×						×		×			×	0	.5	
9	×			×						×		×			×	0	.5	
10	×			×					×				×		×	×	.55	.3 x .3
11	×	×	×							×		×			0	0	.6	
12	×			×						×		×			0	0	.6	
13	×							×		×				×	×	0	.7	.3
14	×			×						×			×		×	0	.5	
15	×			×						×			×		×	0	.4	
16	×		×							×				×	0	0	.7	
17		×				×				×		×			×	×	.5	.35 x .35
18	×			×						×			×		×	0	.55	
19	×					×				×		×			0	0	.33	.3 x .8
20	×			×						×				×	×	0	.6-.5	.5 x .7
21	×		×						×				×		0	×	.45	.3 x .5
22	×							×		×				×	×	0	.6	.35 x .35
23		×		×						×			×		×	0	.8	
24	×			×						×				×	0	0	.7	
25	×			×						×			×		×	0	.6	.35 x .35
26	×					×				×				×	×	0	.6	
27		×	×							×		×			×	0	.4	.3 x .3
28	×					×				×				×	×	0	.5	
29	×		×							×			×		×	×	.6	.4 x .7
30	×			×						×			×		×	0	.6	
31	×		×							×			×		×	0	.4	
32	×					×				×				×	×	0	.65	.3 x .3
33	×		×							×				×	×	×	.6	.4 x .7
34	×						×			×			×		×	0	.5	
35	×			×						×				×	0	0	.6	.3 x. 35
36	×					×				×				×	×	0	.45	.3 x .35
37	×							×		×				×	0	0	.9	.5 x .75
38	×			×						×			×		×	×	.6	.4 x .6
39	×			×					×					×	0	×	.55	.4 x .6
40	×					×				×			×		0	0	.9	
41	×				×					×			×		0	0	.6	.25 x .4 .3 x .3
42		×		×					×					×	0	0	.7	
43	×			×					×					×	0	0	.6	.3 x .4
44	×		×							×			×		×	0	.55	.35 x .4
45		×			×					×		×			×	0	.7	.4 x .5
46	×			×						×			×		×	0	.5	
47	×			×						×			×		×	0	.45	.3 x .35
48	×			×						×				×	×	0	.75	.3 x .3
49	×		×							×				×	×	0	.7	
50	×			×						×			×		×	0	.6	
51	×		×							×				×	×	×	.7	
52	×			×						×			×		×	0	.5	
53	×			×						×			×		×	0	.8	.5 x 1.1
54	×			×						×			×		0	0	.9	
55	×					×				×			×		0	0	.55	.5 x .5
	49	7	10	29	2	9	1	4	6	49		8	28	19	38	9		

Line:
20. Lip flattened and rounded.
42. Double stamped—not measurable.
45. Part of smoothed rim and grilled upper body.

CHART III.—SITE No. 3, TYPE III—TEXTILE MARKED

[Museum catalog No. 6430]

	Grit		Hardness						Surface finish		Texture					Color		Thickness
	L	O	2–2.5	2.5	2.5–3	3	3.5	4	T	T&S	F	MF	M	MC	C	SBI	SBE	
																		cm
1	----	×	----	×	----	----	----	----	×	----	×	----	----	----	----	×	0	0.8
2	----	×	----	×	----	----	----	----	×	----	×	----	----	----	----	×	0	.6
3	----	×	----	----	×	----	----	----	×	----	×	----	----	----	----	×	0	.65
4	----	×	----	×	----	----	----	----	×	----	×	----	----	----	----	×	0	.7
5	----	×	----	×	----	----	----	----	×	----	----	----	----	×	----	0	×	.5–1
6	----	×	----	----	----	----	----	×	×	----	----	----	×	----	----	×	×	.6–0.8
7	----	×	----	----	----	----	----	×	×	----	----	----	×	----	----	×	×	.9
8	----	×	----	----	----	----	×	----	×	----	----	----	----	×	----	0	×	.9
9	×	----	----	×	----	----	----	----	×	----	----	----	×	----	----	×	×	.7
10	----	×	----	----	----	----	×	----	×	----	----	----	×	----	----	×	0	.6
11	×	----	----	×	----	----	----	----	×	----	----	----	----	×	----	0	0	.6
12	×	----	----	----	----	×	----	----	----	×	----	----	----	×	----	0	0	.7
13	×	----	----	----	----	----	----	×	×	----	----	----	×	----	----	×	0	.7
14	----	×	----	----	----	----	----	×	×	----	----	----	×	----	----	×	0	.6
15	×	----	----	----	----	×	----	----	×	----	----	----	----	----	×	×	0	1
16	×	----	----	×	----	----	----	----	----	×	----	----	----	×	----	×	0	.6
17	×	----	----	×	----	----	----	----	----	×	----	----	----	×	----	×	×	.65
18	×	----	----	×	----	----	----	----	×	----	----	----	----	×	----	0	×	.8–1
19	×	----	×	----	----	----	----	----	----	×	----	----	×	----	----	0	0	.7
20	×	----	----	----	----	----	×	----	----	×	----	----	----	×	----	0	0	.8
21	×	----	----	×	----	----	----	----	----	×	----	----	----	×	----	0	0	.65
22	×	----	----	×	----	----	----	----	----	×	----	----	×	----	----	×	0	.65
23	×	----	----	----	----	×	----	----	----	×	----	----	----	×	----	×	0	.7
24	×	----	----	×	----	----	----	----	----	×	----	----	×	----	----	×	0	.7
25	×	----	----	×	----	----	----	----	×	----	----	×	----	----	----	×	0	.6
26	----	×	----	×	----	----	----	----	----	×	----	----	----	×	----	×	0	.6
27	×	----	×	----	----	----	----	----	×	----	----	----	×	----	----	0	0	.75
28	×	----	----	×	----	----	----	----	----	×	----	----	----	×	----	0	0	.6
29	×	----	----	×	----	----	----	----	×	----	----	----	----	----	×	×	0	1.1
30	×	----	----	----	----	×	----	----	----	×	----	----	----	×	----	×	×	.9
31	×	----	----	×	----	----	----	----	----	×	----	----	----	×	----	0	0	1.3
32	×	----	----	×	----	----	----	----	×	----	----	----	----	×	----	×	0	.9
33	----	×	----	×	----	----	----	----	×	----	----	----	×	----	----	0	0	.65
34	----	×	----	×	----	----	----	----	×	----	----	----	×	----	----	0	0	.6
35	×	----	×	----	----	----	----	----	×	----	----	----	×	----	----	0	0	.7
36	----	×	----	----	----	----	----	----	----	×	----	----	----	----	×	0	0	.9
37	×	----	----	×	----	----	----	----	----	×	----	----	×	----	----	0	0	.75
38	×	----	----	×	----	----	----	----	----	×	----	----	×	----	----	0	0	.7
39	×	----	----	×	----	----	----	----	----	×	----	----	×	----	----	×	×	.7
40	×	----	----	×	----	----	----	×	----	×	----	----	----	×	----	×	0	.9
	26	14	3	24	1	4	3	5	22	18	4	1	16	16	3	23	9	------

Line 5. Rounded lip, gravel temper—stiff wide warp.

CHART IV.—SITE No. 3—MISCELLANEOUS—STRIATED—SMOOTHED

[Museum catalog No. 6430]

	Grit		Hardness					Surface finish			Texture				Color		Thickness
	L	O	2–2.5	2.5	3	3.5	4	STR	SM	T–P SM	MF	M	MC	C	SBI	SBE	
																	cm
1	×	----	----	×	----	----	----	----	----	×	----	×	----	----	0	0	0.8–0.5
2	×	----	----	×	----	----	----	----	----	×	----	×	----	----	×	0	.7– .8
3	×	----	×	----	----	----	----	----	×	----	----	----	×	----	0	0	.4– .7
4	×	----	×	----	----	----	----	----	×	----	----	×	----	----	×	0	.3– .5
5	×	----	×	----	----	----	----	----	----	×	×	----	----	----	0	0	.3– .4
6	×	----	×	----	----	----	----	----	×	----	----	×	----	----	0	×	.35–.4
7	×	----	×	----	----	----	----	----	×	----	----	×	----	----	0	×	.35–.4
8	×	----	----	×	----	----	----	×	----	----	----	×	----	----	×	×	.75
9	×	----	×	----	----	----	----	×	----	----	----	×	----	----	0	0	.6
10	×	----	----	×	----	----	----	×	----	----	----	----	×	----	×	0	.65
11	×	×	----	×	----	----	----	----	----	×	----	----	----	×	×	0	1.4
12	×	----	----	----	×	----	----	----	×	----	----	----	----	×	0	×	1.5
13	×	----	----	×	----	----	----	----	----	×	----	×	----	----	×	0	.5
14	×	----	----	×	----	----	----	----	×	----	----	×	----	----	0	0	.5
15	×	----	×	----	----	----	----	----	×	----	----	×	----	----	0	×	.55
16	----	×	----	----	----	×	----	----	×	----	----	----	×	----	×	×	.8
17	×	----	----	×	----	----	----	----	×	----	----	----	×	----	×	×	.55
18	×	----	----	----	×	----	----	----	×	----	----	----	×	----	0	0	.65
19	×	----	----	×	----	----	----	----	×	----	----	×	----	----	0	0	.6
20	×	----	----	----	×	----	----	----	×	----	×	----	----	----	×	0	.6
21	×	----	×	----	----	----	----	----	×	----	----	----	×	----	×	0	.7
22	×	----	×	----	----	----	----	----	×	----	----	----	----	×	×	0	.9
23	----	×	----	×	----	----	----	----	----	×	----	×	----	----	×	0	.6
24	×	----	----	×	----	----	----	----	×	----	----	×	----	----	×	0	.5
25	×	----	----	----	----	----	×	----	×	----	----	----	×	----	0	×	.5
26	×	----	----	----	----	----	×	----	×	----	----	----	×	----	×	×	.55
27	×	----	----	----	×	----	----	----	×	----	----	×	----	----	0	0	.6
28	×	----	----	×	----	----	----	----	×	----	----	×	----	----	0	0	.5
29	×	----	×	----	----	----	----	----	×	----	----	×	----	----	×	0	.7
30	×	----	----	×	----	----	----	----	×	----	----	----	×	----	×	0	.7
31	×	----	----	×	----	----	----	----	×	----	----	×	----	----	0	0	.6
32	×	----	----	×	----	----	----	----	×	----	----	×	----	----	×	0	.6
33	×	----	----	×	----	----	----	----	×	----	----	×	----	----	0	0	.7
34	----	×	----	×	----	----	----	----	×	----	----	×	----	----	×	0	.1
35	×	----	----	×	----	----	----	----	×	----	----	×	----	----	×	0	.5
36	×	----	----	×	----	----	----	----	×	----	----	×	----	----	×	0	.5
37	×	----	----	×	----	----	----	----	×	----	----	----	×	----	×	×	.7
38	×	----	×	----	----	----	----	----	×	----	----	×	----	----	×	0	.5– .7
39	×	----	×	----	----	----	----	----	×	----	----	----	×	----	×	0	.65
	36	4	12	20	4	1	2	3	30	6	2	23	11	3	23	10	------

Line:
1. Lip flattened, widened exteriorly; surface probably grilled.
2. Lip bears griddle marks 0.5 by 0.8; exterior smoothed, grilled; very straight flat rim.
3. Lip slightly everted and roughly flat—surface fine horizontal striations.
4. Lip N. & R.; rim slightly flared near lip; surface slightly crackled.
5. Lip very narrow, slightly flared near lip; grilled and smoothed.
6. Lip rounded.
7. Lip rounded, probably same as 6.
8. Brushed striations.
9. Brushed striations.
10. Striated and smoothed—Zygospira sp.? Ordovician—small specimen.
11. C. W. P. striations—basal portion.
12. Basal portion.
13. Probably grilled and then smoothed.
15. Same as 6 and 7.
17. Fossil.
19. Probably had grilled stamp.
21. Fossil.
22. Many fossils.
23. Probably twine.
25. Had been grilled.
26. Probably had been grilled—fossil.
27. Probably had been grilled.
28. Probably had been grilled.
29. Probably had been grilled.
30. Had been grilled, 0.5 by 0.8.
37. Probably had been grilled.
38. Probably had been grilled.
39. Probably had been grilled.

CHART V.—SITE NO. 3

	Number	Grit temper		Hardness					
		L	O	2-2.5	2.5	2.5-3	3	3.5	4
Type I	21	6	15	5	11	----	2	----	3
Type II	55	48	7	10	29	2	9	1	4
Type III	40	26	14	3	24	1	4	3	5
Miscellaneous	39	36	4	12	20	----	4	1	2
	155	116	40	30	84	3	19	5	14

	Surface finish							Texture					Color	
	Sta.	CWP	Te	Str.	Sta. Sm.	Sm.	Te. Sm.	F	MF	M	MC	C	SBI	SBE
Type I	----	21	----	----	----	----	----	1	1	8	8	3	7	6
Type II	6	----	----	----	49	----	----	----	8	28	19	----	38	8
Type III	----	----	22	----	----	----	18	4	1	16	16	3	23	9
Miscellaneous	----	1	----	3	14	20	1	----	2	23	11	3	23	10
	6	22	22	3	63	20	19	5	12	75	54	9	91	33

CHART VI.—SITE NO. 12, TYPE I—TOOLED WITH CORD-WRAPPED PADDLE

[Catalog No. 6431]

	G	Hardness				Surface finish	Color		Texture				Thickness
		2-2.5	2.5	2.5-3	3-3.5	CWP	SBI	SBE	MF	M	MC	C	
													cm
1	×	×	----	----	----	×	×	0	----	----	----	×	1.2
2	×	×	----	----	----	×	×	0	×	----	----	----	.8
3	×	----	×	----	----	×	0	×	----	×	----	----	.8
4	×	×	----	----	----	×	×	×	----	×	----	----	1
5	×	----	×	----	----	×	×	×	----	----	×	----	1.1
6	×	----	×	----	----	×	×	×	×	----	----	----	1
7	×	----	×	----	----	×	0	×	----	×	----	----	1
8	×	----	----	----	×	×	×	×	----	----	----	×	1
9	×	×	----	----	----	×	×	×	----	×	----	----	.8
10	×	×	----	----	----	×	0	0	----	×	----	----	.7-1
11	×	×	----	----	----	×	0	0	----	×	----	----	.8-1
12	×	----	×	----	----	×	0	×	----	----	----	×	.9-1
13	×	----	×	----	----	×	×	0	----	----	----	×	.7-.9
14	×	×	----	----	----	×	0	0	----	×	----	----	.8
15	×	×	----	----	----	×	0	0	----	×	----	----	.9
16	×	----	----	×	----	×	×	0	----	----	×	----	.9
17	×	----	×	----	----	×	×	0	----	----	----	×	.9
18	×	×	----	----	----	×	0	0	----	×	----	----	.9
19	×	×	----	----	----	×	×	0	----	----	----	×	1
20	×	×	----	----	----	×	0	0	----	×	----	----	1
21	×	----	×	----	----	×	×	0	----	----	×	----	.9
22	×	×	----	----	----	×	×	0	----	----	×	----	.9
23	×	×	----	----	----	×	×	0	----	----	×	----	1.2
24	×	----	×	----	----	×	0	0	×	----	----	----	1
25	×	----	×	----	----	×	×	0	----	----	----	×	1.4
26	×	----	×	----	----	×	×	×	×	----	----	----	.8
27	×	×	----	----	----	×	×	×	----	×	----	----	.7
28	×	----	×	----	----	×	0	0	----	×	----	----	1
	28	14	12	1	1	28	17	10	4	12	5	7	----

Line:
3. Slightly cord marked on interior surface.
10. Cord marks partly obliterated.
15. Some cord marks on interior surface.
28. Same as 24.

CHART VII.—SITE NO. 12, TYPE II

[Catalog No. 6431]

	G	Hardness		Surface finish, net impress	Texture		Rim shape, slight incurve	Lip shape, N & R	Color		Thickness
		2-2.5	2.5		MF	M			SBI	SBE	
											cm
1	×	×	----	×	×	----	×	×	0	0	0.4-1.1
2	×	×	----	×	×	----	×	×	0	0	.4-1.1
3	×	×	----	×	×	----	×	×	0	0	.6-1.1
4	×	×	----	×	×	----	------	------	0	0	1.2
5	×	×	----	×	-----	×	------	------	0	0	1.3
6	×	×	----	×	-----	×	------	------	0	0	1.1
7	×	×	----	×	-----	×	------	------	×	0	.8-1
8	×	×	----	×	×	----	------	------	×	0	.8
9	×	×	----	×	-----	×	------	------	0	0	1.1
10	×	------	×	×	-----	×	------	------	0	0	1.2-1.4
11	×	------	×	×	×	----	------	------	0	0	1.1
12	×	×	----	×	×	----	------	------	0	0	1.2
13	×	×	----	×	-----	×	------	------	0	0	1.2
14	×	×	----	×	×	----	------	------	0	0	1.3
15	×	×	----	×	×	----	------	------	0	0	1.1-1.3
16	×	×	----	×	×	----	------	------	0	0	1.2
17	×	×	----	×	×	----	------	------	0	0	1.1
18	×	×	----	×	×	----	------	------	×	0	.8
19	×	×	----	×	×	----	------	------	0	0	1.1
20	×	×	----	×	-----	×	------	------	×	0	.6
21	×	×	----	×	×	----	------	------	×	0	.9
22	×	×	----	×	×	----	------	------	0	0	1.3
23	×	×	----	×	-----	×	------	------	×	0	.7
24	×	×	----	×	×	----	------	------	×	0	.8
25	×	×	----	×	×	----	------	------	0	×	1.2
26	×	×	----	×	-----	×	------	------	0	0	1
27	×	×	----	×	×	----	------	------	×	0	.7-.9
28	×	×	----	×	-----	×	------	------	×	0	1
	28	26	2	28	18	10	3	3	9	1	--------

Line:
1. Lip to 4 centimeters below lip.
3. Lip is more rounded.
20. Net impression quite indistinct.

CHART VIII.—SITE NO. 12, TYPE III

[Catalog No. 6431]

	G	Hardness			Surface finish		Texture				Color		Thickness
		2-2.5	2.5	2.5-3	T	T&S	C	MF	M	MC	SBI	SBE	
													cm
1	×	×	----	----	----	×	----	×	----	----	0	0	0.7
2	×	----	×	----	----	×	----	----	×	----	0	0	1
3	×	×	----	----	----	×	----	----	×	----	×	0	.8
4	×	×	----	----	----	×	----	----	×	----	×	0	.8
5	×	×	----	----	----	×	----	----	×	----	×	0	.7
6	×	----	×	----	----	×	----	×	----	----	0	0	.8
7	×	×	----	----	----	×	----	----	×	----	0	0	.8
8	×	×	----	----	----	×	----	----	×	----	0	0	.7
9	×	×	----	----	----	×	----	×	----	----	×	0	.5
10	×	×	----	----	----	×	----	×	----	----	×	0	.6
11	×	----	----	×	----	×	----	----	×	----	0	0	.6
12	×	×	----	----	----	×	----	----	×	----	×	0	.6
13	×	×	----	----	----	×	----	×	----	----	×	0	.8
14	×	×	----	----	----	×	----	×	----	----	0	0	.55
15	×	----	×	----	----	×	----	×	----	----	0	0	.5
16	×	×	----	----	----	×	----	----	×	----	0	0	.3-0.7
17	×	×	----	----	×	----	----	----	----	×	0	×	.8
18	×	----	×	----	×	----	×	----	----	----	×	0	1
19	×	×	----	----	×	----	×	----	----	----	×	0	1
20	×	----	×	----	×	----	----	----	×	----	×	0	.7-.1
21	×	----	×	----	×	----	----	----	×	----	0	0	.8
22	×	----	×	----	×	----	----	----	----	×	0	0	.7-.9
23	×	×	----	----	----	×	----	----	----	×	×	0	.6
24	×	×	----	----	----	×	----	----	----	×	0	0	.8
25	×	----	×	----	----	×	----	----	----	×	0	0	.7-.8
26	×	×	----	----	----	×	----	×	----	----	0	0	.5
27	×	----	×	----	×	----	----	----	----	×	×	0	.7
28	×	×	----	----	----	×	----	----	----	×	×	0	.7-.9
29	×	×	----	----	----	×	----	----	×	----	×	0	.9
30	×	×	----	----	×	----	----	----	----	×	0	×	.6-.7
31	×	×	----	----	----	×	×	----	----	----	0	0	1
32	×	----	×	----	----	×	×	----	----	----	×	0	.7
33	×	----	×	----	----	×	×	----	----	----	0	0	.5-.7
34	×	×	----	----	----	×	×	----	----	----	0	0	.7
35	×	----	×	----	----	×	----	----	----	×	×	0	.8
36	×	×	----	----	----	×	----	----	×	----	0	0	.7
37	×	----	----	×	×	----	----	----	×	----	×	0	.6-.7
38	×	×	----	----	×	----	----	----	×	----	×	0	.7
39	×	×	----	----	----	×	----	----	----	×	0	×	.75
40	×	×	----	----	×	----	×	----	----	----	0	0	.75
	40	26	12	2	11	29	7	8	15	10	18	3	--------

Line:
16. Narrowed lip—quartz temper.
17. Some crystalline temper.
19. Larger cord imprint.
33. Granite temper.
37. Larger cord imprint—granite temper.
38. Larger cord imprint—granite temper.

CHART IX.—SITE NO. 12—MISCELLANEOUS—STAMPED, STRIATED, SMOOTHED PIECES

[Catalog No. 6431]

	Grit		Hardness						Surface finish				Texture				Color		Thickness
	L	Cry.	2	2–2.5	2.5	2.5–3	3	3.5	Sta.	Str.	SM	T & S	F	MF	M	MC	SBI	SBE	
																			cm
1	×			×					×					×			0	×	0.6–0.8
2		×		×					×						×		0	0	.6
3	×			×					×						×		0	0	.5
4		×		×								×	×				0	0	.6
5	×			×							×		×				0	0	.4–.6
6	×							×			×		×				0	0	.4–.7
7	×			×							×		×				0	0	.5–.6
8	×			×							×		×				0	0	.5–.7
9	×			×								×			×		0	×	.6–.7
10		×		×								×			×		0	0	.55
11	×			×						×				×			×	0	.5
12	×			×						×				×			×	×	.5
13	×			×						×				×			×	×	.5
14	×				×					×						×	0	0	.6
15	×			×							×			×			×	0	.5
16	×			×							×			×			×	×	.5
17	×				×					×						×	×	×	.45
18	×			×						×						×	×	×	.6
19	×			×							×					×	×	×	.8
20	×			×							×			×			×	×	.6
21	×							×				×		×			×	0	.7
22	×				×							×			×		×	0	.6
23	×				×							×				×	0	0	1
24	×				×							×		×			0	0	.75
25	×			×								×				×	0	0	1
26	×				×							×			×		0	0	.7
27	×		×									×				×	×	0	1
28	×			×								×			×		0	0	.8
29	×			×								×				×	0	0	.9–1.3
30	×			×								×			×		0	0	.7
31	×			×								×		×			0	0	.7
32	×			×							×		×				×	0	.5
33	×			×							×				×		0	×	.6
34	×				×							×				×	0	0	1
35	×			×								×				×	0	0	1
36	×			×								×			×		×	0	.7
37	×			×								×			×		0	×	.6
38	×			×								×			×		0	0	1
39	×				×							×			×		×	0	.6
40	×				×							×				×	0	0	.5–1
41	×			×								×			×		0	0	.7–.9
42	×			×								×			×		0	0	.9
43	×			×							×				×		0	0	.6
44	×			×							×				×		×	0	.7
45	×			×								×			×		0	0	.8
46	×			×							×			×			0	0	.6
47	×				×						×					×	0	0	1.1–1.5
48	×				×						×				×		0	0	.7
49	×						×				×		×				0	0	.7
50	×				×						×		×				×	0	.6
51	×						×				×		×				0	0	.65
52	×			×							×				×		0	×	.7
53	×					×					×				×		0	0	.7
	50	3	1	35	12	1	2	2	3	6	20	24	9	11	21	12	17	12	--------

Line:

1. Sl. Fl. rim 2.5 high at 45° angle—Lip Fl. and Rd. stamp smoothed.
2. Stamp marks are indistinct.
3. Stamp marks rhomboidal, .9 cm by .7 cm.
4. Flattened, outward slanting lip, straight rim.
5. N. and R. lip—very slight flare to rim.
6. Lip is R—slightly everted, sl. fl. to rim.
7. Fl. lip—sl. fl. rim.
8. R. lip. Short—sl. fl. rim.
9. Probably cord-wrapped paddle impressions.
10. Probably cord-wrapped paddle impressions—dragged.
11. Rather indistinct parallel, closely spaced narrow striations.
12. More indistinct parallel, closely spaced narrow striations.
13. More indistinct parallel, closely spaced narrow striations.
14. A wider, deep striation.
15. Probably had been striated.
16. Same as 12 and 13.
17. Striated like 14, but not so pronounced.
18. Bottom piece; exterior has hole tempering.
19. Small foot, mastoid shape.
25. Probably Type III.
27. Surface eroded; looks like sun-dried mud.
28. Probably Type III. Oolites—Mississippian?
29. Probably Type I.

CHART X.—SITE NO. 12

	Number	G	Hardness						Surface			Finish				Texture					Color	
			2	2–2.5	2.5	2.5–3	3	3.5	CWP	Type II	TE	Sta.	Str.	TE & SM	SM	F	MF	M	MC	C	SBI	SBE
Type I	28	28	---	14	12	1	---	1	28	----	----	---	---	----	----	---	4	11	5	7	17	10
Type II	28	28	---	26	2	---	---	---	----	28	----	---	---	----	----	---	18	10	----	----	9	1
Type III	40	40	---	26	12	2	---	---	----	----	11	---	---	29	----	---	8	15	10	7	18	3
Miscellaneous	53	53	1	35	12	1	2	2	----	----	----	3	6	24	20	9	10	21	13	----	17	12
	149	149	1	101	38	[illegible]	2	3	28	28	11	3	6	53	20	9	30	57	28	14	61	26

NOTE.—Type II—double impression of fabric.

CHART XI.—SITE NO. 11—SALT PAN RIMS A—FABRIC UP TO LIP

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture		Shape of lip			Color		Type weave		Size		Width of lip	Width of rim
		2	2–2.5	2.5	MF	M	N& R	R	F& R	SBI	SB E	Plain twining	Twill twining	Width of 5 warp	Width of 5 weft		
														cm	*cm*	*cm*	*cm*
1	6414		×	----	×	----	----	----	×	0	0	×	----	0.8	3.2	2.3	1
2	6428	----	×	----	----	×	----	----	×	0	0	----	×	.8	1.4	1.8	.75
3	6423	----	×	----	----	×	----	----	×	0	0	×	----	.9	2.6	2.6	1
4	6422	----	×	----	----	×	----	----	×	0	0	×	----	1.2	4.1	2.1	1
5	6420	----	×	----	×	----	----	×	----	×	×	×	----	1.3	3.0	1.7	.5
6	6416	----	×	----	×	----	----	×	----	0	0	×	----	1	2.5	1.6	.8
7	6420	----	----	×	----	×	----	----	×	0	×	×	----	1.5	2.8	2.0	1
8	6426	----	×	----	×	----	----	×	----	0	0	×	----	.85	2.3	1.5	.8
9	6425	----	×	----	×	----	----	×	----	0	0	×	----	1.1	2.8	1.2	.7
10	.6418	----	×	----	----	×	----	×	----	×	----	×	----	1	3.7	1.3–1.8	.8
11	6429	----	×	----	×	----	----	----	×	0	0	×	----	.85	2.2	1.7	.9
12	6420	----	×	----	×	----	----	×	----	0	0	(?)	(?)	(?)	2.1	3	.6
13	6420	----	×	----	×	----	----	×	----	0	0	----	(?)	----	1.5	2	.8
14	6421	----	×	----	×	----	----	×	----	0	0	×	----	1.7	----	1.7	.8
15	6420	----	----	×	×	----	----	----	×	0	0	×	----	----	1.4	1.9	.9
16	6416	----	×	----	----	×	----	×	----	0	0	×	----	1.2	2.4	2.5	1.1
17	6422	----	×	----	×	----	----	----	×	0	0	×	----	1.2	3.4	1.6	.7
18	6416	----	×	----	×	----	----	----	×	×	0	×	----	1.2	3.2	2.4	1.1
19	6416	----	×	----	×	----	----	×	----	0	0	×	----	1.1	[1] 3.7	1.5	1.1
20	6421	----	×	----	×	----	----	----	×	0	0	×	----	1.1	2.0	2.5	.7
21 [2]	6417	----	×	----	×	----	----	----	----	0	0	×	----	1	2.4	2.3	1.2
22	6417	----	×	----	×	----	----	----	×	×	0	×	----	1.7	[1] 4.7	2.4	.8
23	6429	----	×	----	----	×	----	×	----	0	0	----	(?)	(?)	1.9	2.0	1.0
24	6416	----	×	----	----	×	----	×	----	0	0	×	----	.8	1.7	2.6	.8
25	6414	×	----	----	----	×	----	×	----	0	0	×	----	1.2	6.4	2.2	1.4
26 [2]	6429	----	×	----	×	----	----	----	----	×	0	×	----	1	2.1	2.4	.8
27	6429	----	×	----	----	×	----	----	×	0	0	×	----	1.1	2.4	2.9	.6
28 [2]	6422	----	×	----	----	×	----	----	----	0	0	×	----	----	1.0	2.7	.7
29	6422	----	×	----	×	----	----	----	×	0	0	×	----	1.1	3.5	2.5	1.0
30	6425	----	×	----	×	----	----	----	×	×	0	----	(?)	----	.9	1.7	1.4
31	6423	----	×	----	×	----	----	----	×	0	×	----	----	----	1	2.1	1.2
32	6422	----	----	×	----	×	----	×	----	0	0	×	----	.75	2.7	2.0	1.0
33	6420	----	×	----	×	----	----	----	×	0	0	×	----	1.2	2.5	2.4	.8
34	6420	----	×	----	×	----	----	×	----	0	0	----	×	.9	1.5	2.1	1.1
35	6416	----	----	×	×	----	----	----	×	0	0	×	----	1.4	3.7	1.5	.8–1.3
36	6415	----	×	----	×	----	----	×	----	0	0	×	----	.85	2.6	2	1.0
37	6429	----	×	----	----	×	×	----	----	×	×	----	×	----	1.7	.7	.9
38	6422	----	×	----	×	----	----	×	----	0	×	×	----	1.4	3.9	1	.8
39 [3]	6423	----	----	×	×	----	----	×	----	×	×	×	----	1.0	2.4	2.3	1
40 [3]	6417	----	×	----	×	----	----	×	----	0	0	×	----	1.0	2.9	2.4	.8
		1	34	5	27	13	1	19	17	8	6	32	8(?)	----	----	----	----

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[1] Estimated.

[2] The lip has a continuous central depression between the inner and outer edges.

[3] Sherds Nos. 39 and 40 have holes on the lip—No. 39, 1 row; No. 40, 2 rows.

CHART XII—SITE NO. 11—SALT PAN RIMS—FABRIC DEFINITELY BELOW LIP

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture		Shape of lip		Color		Type of weave		Size of weave		Size of cross section	
		2	2–2.5	2.5	MF	M	R	F	SB I	SB E	Plain twining	Twill twining	Width of 5 warp	Width of 5 weave	Width of lip	Width of rim
															cm	*cm*
1.	6427	----	×	----	×	----	×	----	0	0	×	----	1.1	3.7	1.5	1.1
2.	6420	----	×	----	----	×	×	----	0	0	×	----	1.3	3.3	1.1	1.3
3.	6421	----	×	----	×	----	×	----	0	0	×	----	1.3	3.4	1.3	.5
4.	6421	----	×	----	×	----	×	----	0	×	----	×	(?)	1.3	1.5	.5
5.	6514	----	×	----	×	----	×	----	0	0	×	----	1.4	4.3	1.2	1.0
6.	6420	----	×	----	----	×	×	----	0	0	----	×	(?)	1.0	1.4	1.1
7.	6416	----	×	----	×	----	----	×	0	0	×	----	1.3	2.5	1.2	1.1
8.	6417	----	×	----	×	----	----	×	0	0	×	----	1.4	[1]3.6	1.6	.8
9.	6415	----	×	----	×	----	----	×	0	0	----	(?)	------	(?)	1.1	.5
10.	6421	----	×	----	----	×	×	----	0	×	×	----	1.8	5.3	1.1	.7
11.	6416	----	×	----	×	----	×	----	0	0	×	----	.9	[1]3.5	.4	.6
12.	6415	----	×	----	×	----	×	----	0	----	×	----	.9	2.6	1.3	.5
13.	6422	----	×	----	×	----	×	----	0	0	(?)	----	1.2	(?)	1.0	.8
14.	6416	----	×	----	×	----	×	----	0	0	----	×	(?)	(?)	.8	.9
15.	6420	----	×	----	×	----	×	----	0	0	×	----	1.1	2.1	1.2	.9
16.	6421	----	×	----	×	----	----	×	0	0	×	×	2.0 2.1	1.2 .9	1.1	.5
17.	6417	----	----	×	×	----	----	×	0	0	----	×	(?)	1.0	1.0	.5
18.	6416	----	×	----	×	----	×	----	0	0	×	----	1.5	.5	1.5	1.2
19.	6416	×	----	----	×	----	×	----	0	0	×	----	1.3	3.4	1.5	1.3
20.	6420	----	×	----	×	----	×	----	0	0	×	----	1.3	2.3	1.1	.8
21.	6421	----	×	----	×	----	×	----	0	0	×	----	1.3	3.5	1.1	.6
22.	6415	----	×	----	×	----	×	----	0	0	----	×	------	1.4	.6	1.0
23.	6420	----	×	----	×	----	×	----	0	0	----	----	2.0	.6	1.6	1.0
24.	6416	----	×	----	×	----	×	----	0	0	×	----	1.1	3.1	1.3	1.2
25.	6425	----	×	----	×	----	----	×	0	0	×	----	1.3	[1]4.2	1.1	1.1
26.	6422	----	×	----	×	----	----	×	0	0	×	×	------	------	1.2	.5
27.	6420	×	----	----	×	----	----	×	0	0	(?)	----	------	(?)	1.1	.9
28.	6429	×	----	----	×	----	×	----	0	0	×	(?)	------	(?)	.8	.7
29.	6428	×	----	----	×	----	×	----	0	0	----	----	1.1	3.5	.6	.9
30.	6415	----	×	----	×	----	----	×	0	0	----	(?)	------	(?)	.7	.8
31.	6420	----	×	----	×	----	×	----	0	0	×	----	1.1	2.2	1.5	.5
32.	6418	----	×	----	×	----	----	×	0	×	----	×	1.5	.8	1.6	.5
33.	6429	×	----	----	----	×	----	×	0	0	×	----	(?)	3.7	1.4	1.0
34.	6414	----	×	----	×	----	×	----	0	0	----	----	(?)	------	1.2	1.1
35.	6427	×	----	----	----	×	×	----	0	0	----	----	(?)	------	1.3	1.1
36.	6422	----	×	----	×	----	×	----	0	0	×	----	1.4	2.6	(?)	1.2
37.	6417	----	×	----	×	----	×	----	0	0	×	----	1.0	1.9	.9	1.0
38.	6421	×	----	----	×	----	×	----	0	0	×	----	1.3	[1]3.7	1.0	.5
39.	6422	----	×	----	×	----	×	----	0	0	×	----	1.0	[1]2.4	.8	.5
40.	6420	----	×	----	×	----	×	----	0	0	----	×	------	(?)	1.1	1.1
		7	32	1	35	5	29	11	0	3	25	9	------	------	------	------

[1] Estimated.

Line:
10. Rim flange 2.4 cm wide.
11. Lip is narrowed; rim flange, 2.1 cm.
13. Rim flange, 2.2 cm.
14. Lip narrowed.
16. A, twilled twining; B, plain twine close weft, wide warp.
17. Same as 16A; twilled twining.
18. Same as 16A; plain twining.
22. Lip narrowed; same as 16A.
24. Lip narrowed.
25. A lug handle.
26. Same 2 fabrics as on 16.
28. Lip narrowed.
29. Lip narrowed.
30. Rim flange 2.3 cm wide.
32. Twilled twining.
37. Single row of holes in lip.
38. Single row of holes in lip.
39. Rim flange 2.3 cm.
40. Same as 16A.

CHART XIII.—SITE NO. 11—POINTED RIM—STRAIGHT TO SLIGHT FLARE

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture		Surface finish		Shape of lip		Point & knob	Point	Color		Thickness		
		2	2–2.5	2.5	F	MF	CW, P & S	CWP	N&R	R			SBI	SBE	Lip	Rim	Shoulder
															cm	*cm*	*cm*
1	6416	----	----	X	----	X	X	----	X	----	X	----	X	X	0.4	0.8	0.4
2	6414	----	X	----	----	X	X	----	----	X	X	----	0	0	.7	.7	.7
3	6416	----	X	----	----	X	X	----	X	----	X	----	0	0	.4	.9	----
4	6429	X	----	----	X	----	X	----	X	----	X	----	X	X	.35	.55	.65
5	6421	X	----	----	----	X	X	----	X	----	X	----	0	0	.3	1.1	----
6	6418	----	----	X	----	X	X	----	----	X	X	----	X	X	.6	.5	.5
7	6414	----	----	X	----	X	X	----	----	X	X	----	X	X	.4	.4	.4
8	6428	----	----	X	----	X	X	----	----	X	X	----	X	X	.6	.7	----
9	6420	----	X	----	----	X	X	----	----	X	X	----	0	0	.5	----	----
10	6426	----	X	----	----	X	X	----	----	X	X	----	X	0	.7	.65	----
11	6420	X	----	----	----	X	X	----	X	----	X	----	0	0	.4	1.0	----
12	6416	X	----	----	----	X	X	----	X	----	X	----	0	0	.5	.8	.5
13	6424	X	----	----	X	----	X	----	----	X	X	----	0	0	.6	.7	.5
14	6425	----	X	----	----	X	X	----	----	X	----	X	X	X	.9	1.2	1.1
15	6417	----	X	----	----	X	----	X	X	----	----	X	0	0	.4	.8	.7
16	6427	X	----	----	----	X	----	X	X	----	----	X	X	X	.3	.7	----
17	6428	----	X	----	----	X	X	----	----	X	----	X	X	0	.7	.65	----
		6	7	4	2	15	15	2	8	9	13	4	9	7	----	----	----

Line:
2. Rough surface texture.
3. Knob—May have been handle.
5. Hole tempered.
10. Knob—Almost surely a handle.
11. Hole tempered.
12. Hole tempered.
13. Hole tempered.
14. Outer rim strip.
16. Hole tempered—Outer rim strip.
17. Outer rim strip.

CHART XIV.—SITE NO. 11—BOWLS—INCURVED RIMS

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture		Surface finish	Shape of lip			Color		Thickness	
		2	2–2.5	2.5	MF	M	CW, P&S	N & R	R	F & R	SBI	SBE	Lip	Rim
													cm	*cm*
1	6415	----	X	----	X	----	X	----	----	X	X	X	0.8	0.5
2	6414	----	X	----	X	----	X	----	----	X	X	X	.7	.5
3	6421	----	X	----	X	----	X	----	X	----	X	0	.9	.9
4	6418	----	X	----	X	----	X	----	----	X	0	0	1.1	.65
5	6426	----	X	----	X	----	X	X	----	----	X	X	.3	.6
6	6424	X	----	----	X	----	X	----	X	----	X	0	.6	.8
7	6414	X	----	----	X	----	(?)	X	----	----	0	0	.5	.7
8	6427	----	X	----	X	----	X	X	----	----	0	0	.5	.7
9	6421	----	----	X	X	----	X	----	X	----	X	0	.7	.9
10	6423	X	----	----	X	----	(?)	----	X	----	X	X	.6	.5
11	6415	----	X	----	X	----	X	----	----	X	0	0	.7	.7
12	6423	----	X	----	X	----	X	X	----	----	X	0	.35	.7
13	6429	----	X	----	X	----	X	----	X	----	0	X	.65	.9
14	6415	----	X	----	X	----	X	X	----	----	0	0	.4	.9
15	6427	X	----	----	----	X	(?)	X	----	----	0	0	.5	1.2
16	6418	----	X	----	X	----	X	----	X	----	0	0	.7	.6
17	6420	----	X	----	----	X	X	----	----	X	X	0	1.4	1.1
		4	12	1	15	2	14	6	6	5	9	5	-----	-----

Line:
4. Unusually smooth surface—small lug.
6. Hole tempered—bifurcated rim lug.
7. Hole tempered.
9. Small rim node or lug—larger cord imprints.
10. Small rim—lip lug.
11. Angled shoulder—2.2 cm below lip.
12. Upper rim everted.
15. Upper rim has parallel gashes—0.3 cm wide, 1.5 cm long.
16. Smooth. Upper rim flange—notched deep.
17. Lip projects exteriorly—perpendicularly notched.

CHART XV.—SITE No. 11—RIM BOSSES

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture		Surface finish		Shape of lip			Shape of rim		Color		Thickness		Nodes		
		2	2–2.5	2.5	MF	M	CWP	CWP & S	N & R	R	F & R	St.	Sl. flaring	SBI	SBE	Lip	Rim	Height	Length of 3	Width
																cm	cm	cm	cm	cm
1	6429	----	×	----	×	----	×	----	----	×	----	----	×	0	0	0.65	0.9	1.8	3.8	1.8
2	6429	----	----	×	×	----	×	----	×	----	----	×	----	0	×	.45	.6	1.8	[1]4.5	1.6
3	6422	----	×	----	×	----	----	×	×	----	----	×	----	0	0	.4	.9	1.0	[1]3.9	1.4
4	6423	----	×	----	×	----	×	----	×	----	----	×	----	0	0	.4	.8	1.8	[1]3.8	1.4
5	6427	----	×	----	×	----	----	×	×	----	----	×	----	0	0	.5	.9	1.9	[1]3.9	1.3
6	6422	----	×	----	×	----	(?)	----	----	----	×	----	(?)	0	0	.9	(?)	1.7	[1]5.8	1.7
7	6428	----	×	----	×	----	×	----	×	----	----	×	----	0	0	.4	.7	1.9	4.6	1.5
8	6427	----	×	----	×	----	×	----	×	----	----	×	----	×	×	.4	.6	1.5	4.5	1.4
9	6421	----	×	----	×	----	×	----	----	×	----	×	----	0	0	.6	.75	2.1	3.6	1.7
10	6425	----	×	----	×	----	(?)	----	----	×	----	----	×	0	0	.5	.7	2.0	3.7	1.7
11	6429	----	×	----	×	----	×	----	----	----	×	×	----	0	×	.6	.9	1.8	3.5	1.6
12	6420	×	----	----	×	----	(?)	----	×	----	----	×	----	×	0	.4	.9	2.0	3.7	1.7
13	6417	----	×	----	×	----	×	----	----	×	----	----	×	×	0	.6	.8	1.6	3.4	1.6
14	6420	----	×	----	×	----	(?)	----	----	×	----	----	×	0	0	.6	.7	2.1	3.1	1.5
15	6419	----	×	----	×	----	----	×	×	----	----	×	----	×	×	.5	.6	1.1	3.2	1.2
16	6416	----	×	----	×	----	×	----	----	×	----	×	----	×	0	.6	.8	1.9	3.5	1.6
17	6421	----	----	×	----	×	----	×	----	×	----	×	----	0	0	.65	1.1	2.1	[1]4.7	1.7
18	6416	----	×	----	×	----	×	----	----	×	----	×	----	0	0	.5	.8	1.6	3.5	1.4
19	6420	×	----	----	×	----	(?)	----	×	----	----	----	(?)	×	0	.5	.7	1.5	4.0	1.5
20	6419	----	×	----	×	----	(?)	----	----	----	×	×	----	0	0	.6	.5	1.5	2.5	1.3
21	6415	----	×	----	×	----	(?)	----	×	----	----	----	(?)	0	0	.5	1.2	2.1	3.5	1.8
22	6420	----	×	----	×	----	----	×	----	×	----	×	----	0	0	.5	.6	1.6	4.0	1.3
23	6421	----	×	----	×	----	×	----	----	×	----	×	----	0	0	.8	.8	1.8	4.5	1.8
24	6420	----	×	----	×	----	×	----	----	×	----	×	----	×	0	.7	.8	2.3	4.5	1.7
25	6417	----	×	----	×	----	×	----	----	×	----	×	----	×	0	.5	.7	2.0	6.0	1.8
26	6414	----	×	----	×	----	×	----	----	----	×	×	----	0	0	.6	.8	1.4	4.0	1.4
27	6420	×	----	----	×	----	×	----	----	×	----	×	----	0	0	.5	.9	2.5	4.4	1.7
28	6421	----	×	----	×	----	×	----	×	----	----	----	×	0	0	.25	.4	1.6	2.6	1.0
29	6424	----	×	----	×	----	----	×	----	----	×	×	----	×	×	.7	.7	.6	1.3	1.2
30	6420	----	×	----	×	----	----	×	----	----	×	×	----	×	×	.7	.5	.6	2.7	1.2
31	6420	----	×	----	×	----	×	----	----	----	×	×	----	0	0	1.0	.8	.6	2.0	1.6
32	6416	----	×	----	×	----	----	×	×	----	----	×	----	0	0	.5	.6	1.2	2.3	1.0
		3	27	2	31	1	17	8	12	13	7	24	5	10	6	----	----	----	----	----

[1] Estimated.

Line:
12. Hole tempered.
15. Very short rim—angled.
17. Crackle on inside surface.
19. Hole tempered.
26. Definite rim strip.
29. On the rim—lip.
30. On the rim—lip.
31. Lip exteriorly extended—notched.

CHART XVI.—SITE NO. 11—JARS WITH FLATTENED INNER-UPPER RIM

[Catalog Nos. 6414–6429]

	Cat. no.	Hardness			Texture		Surface finish		Shape of rim			Outer rim band	Shape of lip			Thickness		Flaring rim (thickness)	Color	
		2	2–2.5	2.5	MF	M	CWP	S	St.	Sl. Fl.	Fl.	Height	N& R	R	F& R	Lip	Rm		SBI	SBE
												cm				*cm*	*cm*	*cm*		
1	6428	----	×	----	----	×	×	----	----	×	----	3.3	----	×	----	0.6	0.9	2.0	0	×
2	6415	----	----	×	----	×	×	----	----	×	----	2.4	----	×	----	.5	1.0	1.9	×	×
3	6417	----	×	----	×	----	×	----	----	×	----	2.3	×	----	----	.5	.9	2.0	×	×
4	6417	----	×	----	×	----	×	----	----	×	----	2.3	×	----	----	.4	.8	2.0	0	0
5	6424	----	×	----	×	----	×	----	----	×	----	----	×	----	----	.5	.9	1.9	0	0
6	6422	×	----	----	----	×	×	----	×	----	----	3.0	×	----	----	.4	.9	2.3	0	0
7	6414	×	----	----	×	----	×	----	×	----	----	4.7	----	×	----	.5	1.0	1.9	0	0
8	6421	----	×	----	×	----	(?)	----	×	----	----	----	----	----	----	2.1	1.5	2.1	0	0
9	6414	----	----	×	----	×	×	----	×	----	----	----	----	×	----	.7	1.3	2.1	0	0
10	6425	----	×	----	----	×	×	----	×	----	----	----	×	----	----	.5	1.3	2.1	0	0
11	6420	----	×	----	×	----	×	----	----	×	----	----	----	×	----	.7	.7	2.1	0	×
12	6426	----	×	----	×	----	×	----	×	----	----	----	----	×	----	.5	1.0	1.5	0	0
13	6414	×	----	----	×	----	×	----	----	×	----	----	×	----	----	.5	1.1	1.8	0	0
14	6416	×	----	----	×	----	×	----	----	×	----	----	×	----	----	.5	.8	2.3	×	×
15	6416	×	----	----	×	----	----	×	----	×	----	3.3	----	×	----	.7	1.1	2.8	0	0
16	6420	----	----	×	×	----	×	----	----	×	----	----	----	×	----	.6	.8	2.2	0	×
17	6427	----	×	----	×	----	×	----	×	----	----	----	----	×	----	1.0	1.0	1.8	0	0
18	6422	----	×	----	×	----	×	----	----	×	----	----	----	×	----	.7	1.2	2.1	0	0
19	6422	----	----	×	×	----	×	----	----	×	----	2.5	×	----	----	.4	.9	2.0	0	0
20	6422	----	×	----	×	----	×	----	×	----	----	----	----	×	----	.7	1.1	2.5	×	0
21	6420	----	×	----	×	----	×	----	×	----	----	----	----	×	----	.65	1.2	2.4	0	0
22	6419	----	×	----	×	----	×	----	----	×	----	3.3	×	----	----	.5	.7	2.0	0	0
23	6414	----	----	×	×	----	×	----	×	----	----	----	×	----	----	.5	1.0	2.0	×	0
24	6417	----	×	----	×	----	(?)	----	----	(?)	----	----	----	×	----	.8	1.1	2.2	0	0
25	6418	×	----	----	×	----	×	----	×	----	----	----	×	----	----	.6	1.1	1.6	0	0
26	6428	----	×	----	×	--	×	----	×	----	----	2.1	×	----	----	.4	.65	1.6	0	0
27	6417	----	----	×	×	----	×	----	×	----	----	----	×	----	----	.4	.7	1.4	0	0
28	6422	----	×	----	×	----	×	----	----	×	----	2.0	×	----	----	.4	.9	1.7	0	×
29	6419	×	----	----	×	----	----	×	×	----	----	2.7	×	----	----	.4	.75	1.9	0	0
30	6424	----	×	----	----	×	×	----	×	----	----	----	×	----	----	.5	1.3	2.3	0	0
31	6427	----	×	----	×	----	(?)	----	×	----	----	----	----	×	----	.65	.9	2.3	0	0
32	6421	----	×	----	×	----	----	×	×	----	----	2.7	----	×	----	.7	.8	2.2	×	0
33	6417	----	×	----	×	----	×	----	----	×	----	----	×	----	----	.5	.9	2.3	0	0
34	6417	----	×	----	×	----	×	----	×	----	----	----	×	----	----	.5	.7	2.2	0	0
35	6420	----	×	----	×	----	×	----	×	----	----	2.3	×	----	----	.7	1.0	2.7	×	0
36	6420	----	×	----	×	----	×	----	----	×	----	2.0	----	×	----	.5	1.0	1.7	×	0
37	6419	----	×	----	----	×	×	----	----	×	----	2.3	----	×	----	.65	1.1	2.5	0	0
38	6415	----	×	----	×	----	×	----	----	×	----	2.2	×	----	----	.4	1.1	1.9	0	0
39	6415	----	×	----	×	----	×	----	----	×	----	2.6	×	----	----	.5	.8	2.0	×	×
40	6421	----	×	----	×	----	×	----	----	×	----	1.7	×	----	----	.4	.6	1.5	×	0
41	6425	----	×	----	×	----	×	----	----	×	----	2.0	----	×	----	.6	.8	1.9	0	0
42	6417	----	×	----	----	×	×	----	----	×	----	2.3	----	×	----	.8	1.1	2.2	0	0
43	6415	----	×	----	×	----	×	----	----	×	----	3.3	×	----	----	.5	.7	2.3	0	0
44	6425	----	×	----	×	----	×	----	×	----	----	2.1	×	----	----	.3	.85	2.1	×	×
45	6417	----	×	----	×	----	×	----	----	×	----	----	----	×	----	.45	1.1	1.7	×	0
46	6422	----	----	×	×	----	×	----	----	×	----	----	----	×	----	.5	.7	1.7	×	0
47	6414	----	----	×	×	----	----	×	×	----	----	----	----	×	----	.4	1.1	2.0	0	0
48	6417	×	----	----	×	----	×	----	×	----	----	----	----	×	----	.6	1.0	2.0	×	×
49	6424	----	×	----	×	----	----	×	×	----	----	2.0	×	----	----	.3	.9	1.9	0	0
50	6420	----	×	----	×	----	×	----	----	×	----	2.3	----	×	----	.5	.8	1.9	×	×
51	6421	----	×	----	×	----	×	----	----	×	----	----	----	×	----	.4	.65	1.7	×	×
52	6417	----	×	----	×	----	----	×	×	----	----	----	×	----	----	.5	[1].8	1.7	(?)	0
53	6418	----	×	----	×	----	×	----	×	----	----	1.3	----	×	----	.6	1.0	1.5	×	×
54	6415	----	×	----	×	----	×	----	----	×	----	1.3	----	×	----	.5	.9	1.8	×	×
55	6416	----	×	----	×	----	----	×	----	×	----	----	×	----	----	.4	.8	1.9	×	×
56	6427	----	×	----	×	----	----	×	----	×	----	2.5	----	×	----	.6	.8	2.1	0	0
57	6426	----	×	----	×	----	----	×	×	----	----	3.0	----	×	----	.8	1.1	2.1	0	0
58	6425	----	×	----	×	----	×	----	----	×	----	2.1	----	×	----	.5	1.0	2.0	0	0
59	6415	----	×	----	×	----	×	----	----	×	----	1.8	----	×	----	.6	.8	1.6	0	0
60	6418	----	×	----	×	----	(?)	----	×	----	----	2.0	----	×	----	.7	1.3	2.3	×	0
61	6419	----	×	----	×	----	----	×	----	×	----	1.5	×	----	----	.3	.7	2.1	0	0
62	6418	----	×	----	×	----	×	----	----	×	----	1.7	×	----	----	.4	.5	1.1	0	0
63	6422	----	×	----	×	----	×	----	×	----	----	----	----	×	----	.5	.85	1.9	0	0
64	6421	----	×	----	×	----	×	----	----	×	----	1.6	----	×	----	.5	.6	1.3	×	0
65	6421	----	----	×	×	----	(?)	----	×	----	----	----	----	----	×	.5	.9	1.7	0	0
66	6420	----	×	----	×	----	×	----	----	×	----	2.1	----	×	----	.7	1.0	2.5	0	0
67	6414	----	×	----	×	----	----	×	×	----	----	----	----	×	----	.6	.9	2.7	0	0
68	6424	----	----	×	×	----	×	----	----	×	----	2.8	----	×	----	.6	.65	2.0	0	0
69	6421	----	----	×	×	----	×	----	----	×	----	1.9	×	----	----	.4	.7	1.7	×	0
70	6429	----	×	----	×	----	×	----	----	×	----	----	×	----	----	.4	.6	1.8	×	0
71	6422	----	×	----	×	----	×	----	----	----	×	1.6	×	----	----	.3	.5	1.3	×	×

[1] Estimated.

CHART XVI.—SITE NO. 11—JARS WITH FLATTENED INNER-UPPER RIM—Contd.

	Cat. no.	Hardness			Texture		Surface finish		Shape of rim			Outer rim band	Shape of lip			Thickness		Flaring rim (thickness)	Color	
		2	2–2.5	2.5	MF	M	CWP	S	St.	Sl. Fl.	Fl.	Height	N& R	R	F& R	Lip	Rm		SBI	SBE
																cm	*cm*	*cm*		
72	6416	×	----	----	×	----	×	----	----	×	----	2.3	×	----	----	0.5	1.0	1.9	0	0
73	6428	----	×	----	×	----	×	----	×	----	----	2.1	----	×	----	.8	.8	1.6	×	×
74	6421	----	×	----	×	----	×	----	----	×	----	-------	×	----	----	.4	.8	1.8	×	×
75	6422	----	×	----	×	----	×	----	×	----	----	-------	----	×	----	.65	.9	1.9	0	×
76	6416	----	×	----	×	----	×	----	×	----	----	-------	----	×	----	.6	.9	1.5	×	×
77	6415	----	×	----	×	----	×	----	----	(?)	----	-------	×	----	----	.5	.7	1.6	0	0
78	6421	----	×	----	×	----	×	----	×	----	----	-------	×	----	----	.3	.5	1.3	×	0
79	6421	----	×	----	×	----	×	----	×	----	----	-------	×	----	----	.3	1.0	1.6	×	×
80	6419	----	×	----	×	----	×	----	----	(?)	----	1.7	----	×	----	.6	.7	1.9	0	0
81	6415	----	×	----	----	×	×	----	×	----	----	2.2	×	----	----	.6	1.3	2.8	0	0
82	6414	×	----	----	×	----	×	----	×	----	----	1.5	×	----	----	.4	.7	1.6	0	×
83	6424	×	----	----	×	----	------	×	×	----	----	2.2	×	----	----	.5	.7	2.3	0	0
84	6427	×	----	----	×	----	------	×	----	(?)	----	-------	----	×	----	.7	1.0	2.9	0	0
85	6429	×	----	----	×	----	------	×	×	----	----	-------	×	----	----	.5	.7	2.3	0	×
86	6414	×	----	----	×	----	×	----	----	×	----	2.7	×	----	----	.5	.7	1.7	0	0
87	6429	×	----	----	×	----	×	----	----	×	----	2.0	×	----	----	.6	1.1	2.3	0	0
88	6429	×	----	----	×	----	×	----	×	----	----	-------	----	×	----	.6	.8	2.0	0	0
89	6424	×	----	----	×	----	×	----	×	----	----	-------	×	----	----	.4	.8	2.0	0	0
		17	61	11	80	9	70	14	41	43	1	-------	44	43	1	----	----	----	29	23

Line:
8. Flattened area forms a lip.
47. Surface like Fox Farm salt pans.
48. Hole tempered.
74. High rim.

CHART XVII.—SITE NO. 11—JAR RIMS

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture			Surface finish			Shape of rim					O. R. band H	Shape of lip				Thickness			Color	
		2	2–2.5	2.5	MF	M	MC	CW P	CW P & S	S	St.	Sl. Fl.	Fl.	Ang.	Sm. rim		N & R	R	F & R	Fl.	L	R	Sh.	SBI	SBE
																					cm	*cm*	*cm*		
1	6429		×			×		×				×			×			×			0.6	1.0		0	0
2	6422		×		×			×			×				×	3.8	×				.45	1.2		0	0
3	6425		×		×			×			×								×		.7			0	0
4	6429		×		×			×			×					2.1		×			.7	.7		×	0
5	6422	×					×	×			×			×	×		×				.7	1.8	1.5	0	0
6	6419		×		×				×			×						×			.5	.8	.5	0	0
7	6417		×		×			×				×			×	2.3		×			1.0	1.0	.9	0	0
8	6414		×		×			×			×				×				×		.5	.8	.8	0	0
9	6414	×			×			×			×	×						×			.6			0	×
10	6418		×		×			×					×		×		×				.5	.8	1.1	0	0
11	6415		×		×			×					×		×			×			.5	.8	.7	×	×
12	6422		×		×				(?)		×				×	2.2	×				.5	.9		0	×
13	6422		×		×			×				×		×	×	2.3	×				.45	1.2		×	0
14	6425		×		×				×		×				×	1.7	×				.4	.6		0	0
15	6416	×			×			×				×			×			×			.9	.8		0	0
16	6427		×		×			×				×			×		×				.4	.8		0	0
17	6414		×		×			×			×				×	2.1		×			.65	1.2		0	0
18	6429		×		×			×			×				×			×			.5	.6	.5	0	0
19	6425		×		×			×			×			×			×				.5	1.1		0	0
20	6422		×		×			×			×			×		1.7			×		1.0	1.0		0	0
21	6417		×		×			×				×		×	×		×				.4	.6	.6	×	0
22	6418		×		×			×				×					×				.4	.6	.8	×	0
23	6415	×				×		×				×		×					×		1.0	1.2		0	0
24	6421		×		×			×			×				×		×				.5	1.0		×	0
25	6421		×		×			×			×			×	×			×			.5	.9	.3	0	0
26	6417		×		×			×			×				×			×			.6	.7		0	0
27	6416		×		×			×			×			×	×				×		.6	.9	.6	×	×
28	6417		×		×			×			×				×		×				.45	1.0		×	0
29	6421		×		×			×					×		×			×			.65	1.0	1.2	×	0
30	6428		×		×			×			×				×			×			.7	.8		0	×
31	6419	×			×			×					×		×			×			.6	.7		0	0
32	6425		×		×			×				×			×	1.4		×			.4	.5	.5	×	0
33	6421		×		×			×			×				×				×		.7	.7	.7	×	×
34	6418			×	×			×				×			×			×			.55	.55	.6	0	0
35	6414		×		×			×				×			×		×				.5	1.0		0	0
36	6421		×		×			×			×						×				.45	.9		×	×
37	6428			×	×			×			×				×				×		.8	1.0		0	0

38	6421	----	X	----	X	----	----	----	X	----	----	----	X	----	----	----	X	----	----	----	.4	.6	.5	X	0
39	6418	----	X	----	X	----	----	X	----	----	----	X	----	----	X	1.75	----	X	----	----	.5	.6	.6	X	0
40	6419	----	X	----	X	----	----	X	----	----	X	----	----	----	X	----	----	X	----	----	.5	.65	.4	X	X
41	6425	----	X	----	X	----	----	----	X	----	X	----	----	----	X	----	----	X	----	----	.6	1.1	1.0	0	0
42	6416	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	X	----	----	----	.4	.8	----	0	0
43	6418	X	----	----	X	----	----	X	----	----	----	X	----	----	X	3.0	----	X	----	----	.4	1.0	----	X	0
44	6417	----	X	----	X	----	----	X	----	----	----	X	----	----	X	1.7	----	X	----	----	1.0	.7	----	0	0
45	6420	X	----	----	X	----	----	X	----	----	X	----	----	----	X	1.7	X	----	----	----	.6	.8	----	X	0
46	6420	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	----	----	X	----	.6	1.2	1.0	----	0
47	6421	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	----	X	----	----	.8	.9	1.0	X	0
48	6414	X	----	----	X	----	----	X	----	----	X	----	----	----	X	----	X	----	----	----	.4	----	----	----	0
49	6419	X	----	----	X	----	----	----	X	----	X	----	----	----	X	3.0	----	----	X	----	.7	.9	.8	0	0
50	6428	X	----	----	X	----	----	----	X	----	----	X	----	----	X	2.1	X	----	----	----	.3	1.0	----	0	0
51	6416	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	----	----	X	----	.5	.8	.9	X	0
52	6418	----	X	----	X	----	----	----	X	----	X	----	----	X	X	----	----	X	----	----	.6	.7	.6	X	0
53	6424	----	X	----	X	----	----	X	----	----	X	----	----	----	----	----	X	----	----	----	.5	----	.6	X	0
54	6420	X	----	----	----	----	X	X	----	----	X	----	----	X	----	----	X	----	----	----	.4	1.0	1.0	0	0
55	6416	----	X	----	X	----	----	X	----	----	X	----	----	X	X	----	----	----	----	X	.6	.8	.4	0	0
56	6427	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	----	----	X	----	.65	.8	.6	X	X
57	6429	----	X	----	X	----	----	X	----	----	X	----	----	X	X	----	----	X	----	----	.6	1.1	.6	X	0
58	6417	----	----	X	----	X	----	X	----	----	X	----	----	X	X	----	----	X	----	----	.6	1.1	1.0	X	0
59	6421	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	----	----	----	----	----	.7	.7	X	0
60	6428	----	X	----	X	----	----	X	----	----	X	----	----	----	X	----	X	----	----	----	.6	.8	.7	0	X
61	6418	----	X	----	X	----	----	X	----	----	----	X	----	----	X	----	X	----	----	----	.6	.7	.7	0	0
62	6415	----	----	X	X	----	----	X	----	----	X	----	----	X	X	----	----	----	----	----	----	1.1	.7	0	0
63	6416	X	----	----	X	----	----	X	----	----	----	X	----	----	X	----	----	----	X	----	.7	.75	.4	X	0
64	6414	----	X	----	----	X	----	X	----	----	X	----	----	X	X	----	----	X	----	----	.6	1.1	----	0	0
65	6425	X	----	----	X	----	----	X	----	----	X	----	----	X	X	----	----	X	----	----	.8	1.2	1.1	X	0
66	6415	X	----	----	X	----	----	X	----	----	----	X	----	----	X	----	X	----	----	----	.4	.7	.6	X	X
67	6421	X	----	----	X	----	----	----	X	----	----	X	----	----	X	----	X	----	----	----	.5	.7	.7	X	0
68	6421	----	----	X	X	----	----	----	X	----	----	X	----	----	X	----	----	X	----	----	.65	.8	1.0	0	0
69	6414	----	X	----	X	----	----	X	----	----	----	(?)	----	----	X	----	----	----	----	X	.5	----	----	0	X
70	6421	----	----	X	X	----	----	----	X	----	X	----	----	----	X	----	----	X	----	----	.7	.7	1.0	X	0
71	6419	X	----	----	----	X	----	----	X	----	X	----	----	----	----	----	----	X	----	----	.8	1.2	----	0	0
72	6421	----	X	----	X	----	----	X	----	----	----	----	X	----	X	----	----	X	----	----	.9	1.1	1.0	0	0
73	6421	----	----	X	F	----	----	X	----	----	----	----	X	----	X	----	X	----	----	----	0.3	0.6	0.9	0	X
74	6422	----	X	----	X	----	----	----	X	----	X	----	----	----	X	----	X	----	----	----	.3	.7	.5	X	X
75	6418	X	----	----	X	----	----	X	----	----	----	X	----	----	X	----	----	X	----	----	.4	.5	.7	0	0
76	6423	----	X	----	X	----	----	X	----	----	X	----	----	----	X	----	X	----	----	----	.3	.9	----	0	X
77	6429	X	----	----	----	X	----	----	X	----	X	----	----	X	X	----	----	X	----	----	.9	1.6	1.2	X	0
78	6414	X	----	----	X	----	----	X	----	----	X	----	----	----	X	----	----	(?)	----	----	----	1.0	.5	0	X
79	6421	----	----	X	X	----	----	----	----	X	----	X	----	----	X	----	X	----	----	----	.45	.7	.7	0	X
80	6415	----	X	----	X	----	----	X	----	----	X	----	----	----	----	----	----	X	----	----	.8	.8	----	X	0
81	6425	----	X	----	X	----	----	----	X	----	X	----	----	----	----	----	----	X	----	----	.8	1.1	----	0	X
82	6421	----	----	X	F	----	----	----	----	X	----	X	----	----	X	----	----	X	----	----	.5	.6	----	X	X
83	6421	----	X	----	X	----	----	----	(?)	----	X	----	----	----	X	----	----	----	X	----	.5	.8	----	0	0
84	6414	----	X	----	X	----	----	----	(?)	----	----	X	----	----	X	----	----	----	X	----	1.1	.8	----	0	0
85	6421	----	X	----	X	----	----	X	----	----	X	----	----	X	X	----	----	----	----	X	.7	.7	----	0	0
86	6421	----	X	----	X	----	----	X	----	----	X	----	----	----	X	----	X	----	----	----	.4	.9	----	X	0
87	6422	----	X	----	X	----	----	----	(?)	----	X	----	----	----	X	----	----	X	----	----	.7	1.0	----	X	0

CHART XVII.—SITE NO. 11—JAR RIMS—Continued

	Catalog no.	Hardness			Texture			Surface finish			Shape of rim					O. R. band H	Shape of lip				Thickness			Color	
		2	2-2.5	2.5	MF	M	MC	CW P	CW P & S	S	St.	Sl. Fl.	Fl.	Ang.	Sm. rim		N & R	R	F & R	Fl.	L	R	Sh.	SBI	SBE
																					cm	*cm*	*cm*		
88	6421		X		X				X		X				X	2.0		X			.4	1.0		0	0
89	6422	X			X				X			X						X			.5	1.0		0	0
90	6418		X		X					X		X							X		.45	.7	.65	0	X
91	6422		X		X			X			X				X			X			.5	.7		0	0
92	6422		X		X					X					X		X				.4	.7		0	X
93	6419			X	X			X				X			X		X				.6	1.0		0	0
94	6414	X			X				X		X				X	3.7		X			.7	1.2		X	0
95	6416		X		X				(?)			X			X			X			.8	.8			
96	6426		X		X					X		X			X		X				.4	.5	.9	X	0
97	6429		X			X		X			X				X			X			.7	1.3		X	0
98	6420		X		X				(?)			X			X			X			.8	.9		0	X
99	6424	X			X				(?)			X			X		X				.6	1.0		0	0
100	6421			X	X				X		X				X			X			.8	1.0		0	0
101	6426		X		X					X		X			X				X		.6	.9	.7	0	0
102	6421		X		X					X		X			X			X			.5	.9	.8	0	X
103	6423		X		X					X		X			X			X			.5	.6	.9	X	0
104	6415		X		X				(?)		X				X			X			.7	.8		X	0
105	6426		X		X				X		X				X			X			.7	.8		0	0
106	6421		X		X					X			X		X			X			.6	.8		X	0
107	6421		X		X					X			X		X			X			.6	1.1		X	X
108	6418		X		X				X			X			X			X			.8	.6		0	0
109	6421	X			X					X			X		X	2.3		X			.6	.9	1.0	X	0
110	6421			X	X				(?)		X				X			X			.6	.9		0	0
111	6421			X	X				(?)		X				X			X			.6	1.1		0	0
112	6421			X	X					X		X			X		X				.5	.9		0	0
113	6421		X		X					X	X				X			X			.6	.6		0	0
114	6415	X			F					X	X				X	1.8		X			.8	.9	.7	X	0
115	6416	X			X					X	X				X				X		.6	1.0		0	0
116	6419	X			X					X	X				X	1.4			X		.7	1.0		X	0
117	6421		X		X				X			X			X		X				.5	.8		X	X
118	6425	X			X				(?)			X			X	1.4		X			.5	.6		0	0
119	6421		X		X					X			X		X			X			1.1	.9		0	X
120	6422		X		X				X			X			X			X			.6	.7	.6	0	0
121	6417		X		X					X		X			X	2.0	X				.3	.9	.8	0	0
122	6421		X		X					X	X			X	X		X				.4	1.4	1.0	X	0
123	6418		X		X					X			X		X			X			.5	.9		X	X
124	6425	X			X					X		X			X			X			.6	1.0		0	0
125	6421		X		X					X	X				X			X			.5	1.0		X	X

126	6421	×	------	------	F	------	------	------	------	×	×	------	------	------	×	------	------	------	×	------	.6	.6	------	0	0
127	6429	×	------	------	×	------	------	------	------	×	×	------	------	------	×	------	------	------	×	------	.6	1.0	------	0	0
	------	30	83	14	114 F/4	7	2	70	22	24	65	49	12	19	110	------	38	63	20	3	------	------	------	50	28

Line:
5. Shell prominent on inner surface.
9. Hole tempered.
15. Hole tempered.
22. Short rim—small vessel.
23. Surface rough—shell also.
24. Very tall rim.
26. Unusual orange yellow.
33. Lip slopes outward.
46. Strap handle to lip missing.
51. Lip slopes outward.
65. Rim has 90° angle.
69. Flaked interior—surface gone.
71. Shell on interior.
77. Rim has 90° angle.
80. Rim very short; lip everted outwardly.
81. Rim raised above node or handle.
82. Exterior and interior surface flaked.
83. Two small rim lugs.
84. Lip flattened and rolled outward.
89. Thickened upper rim strip.
90. Small vessel.
107. Short rim.
108. Lip everted.
119. Lip everted.
123. Near to Fox-Farm Type III.
124. Slightly hole tempered.
127. A bowl, perhaps.

CHART XVIII.—SITE NO. 11—LOOP AND STRAP HANDLES—RIM

[Catalog Nos. 6414–6429]

	Catalog no.	Hardness			Texture		Shape of rim			Shape of lip			Color		Thickness		Handle		
		2	2–2.5	2.5	MF	M	St.	Sl. Fl.	Fl.	N & R	R	F & R	SB I	SB E	L	R	Lat.	Front to back	Height
															cm	*cm*	*cm*	*cm*	*cm*
1	6416	----	×	----	×	----	----	----	----	----	----	×	×	0	0.7	0.6	1.9	1.9	----
2	6429	----	×	----	×	----	----	----	----	----	×	----	×	0	.65	----	2.4	1.8	7.8
3	6418	----	×	----	×	----	----	----	----	----	×	----	0	0	.7	----	1.7	1.5	----
4	6421	----	×	----	×	----	----	----	----	----	×	----	----	----	.5	----	2.3	1.7	----
5	6421	----	×	----	×	----	----	----	----	----	----	----	----	----	----	----	1.6	1.3	----
6	6421	----	×	----	×	----	----	----	----	----	----	----	----	----	----	----	1.7	1.5	----
7	6420	----	×	----	×	----	----	×	----	----	×	----	0	0	.65	.8	2.1	1.7	----
8	6420	----	×	----	×	----	----	----	----	----	----	----	----	----	----	----	2.1	1.9	----
9	6421	----	×	----	×	----	----	----	----	----	----	----	----	----	----	----	1.8	1.8	----
10	6417	×	----	----	----	×	×	----	----	----	----	----	0	0	----	1.3	2.7	1.3	6.8
11	6416	----	×	----	×	----	----	----	----	----	----	----	----	----	----	1.6	1.4	----	----
12	6429	----	×	----	×	----	----	----	----	----	----	----	----	----	----	2.5	1.7	----	----
13	6424	----	×	----	×	----	----	----	----	----	----	----	----	----	----	2.3	1.7	----	----
14	6415	----	×	----	×	----	----	----	----	----	----	----	----	----	----	2.4	2.1	----	----
15	6429	----	×	----	×	----	----	----	----	----	----	----	----	----	----	2.5	1.9	----	----
16	6422	----	×	----	×	----	----	----	----	----	----	----	----	----	----	1.6	1.3	----	----
17	6415	----	----	×	×	----	----	----	----	----	----	----	----	----	----	1.9	1.9	----	----
18	6420	----	×	----	×	----	----	----	----	----	----	----	----	----	----	2.5	1.7	----	----
19	6416	----	×	----	×	----	----	----	----	----	----	----	----	----	----	2.0	1.6	----	----
20	6420	----	----	×	×	----	----	----	----	----	----	----	----	----	----	1.6	1.4	----	----
21	6420	----	----	×	×	----	----	×	----	----	×	----	×	0	.5	.7	4.2	.7	4.1
22	6415	----	×	----	×	----	----	×	----	----	----	----	0	0	----	.65	3.6	.9	4.4
23	6420	----	×	----	×	----	×	----	----	----	×	----	0	0	.5	.8	3.0	.9	4.0
24	6424	×	----	----	×	----	×	----	----	----	----	----	0	×	----	.5	2.8	.7	3.6
25	6420	×	----	----	×	----	----	----	----	----	----	----	----	----	----	----	4.8	1.3	5.7
26	6419	----	×	----	×	----	----	----	----	----	----	----	----	----	----	----	6.7	1.0	----
27	6421	----	×	----	×	----	----	----	----	×	----	----	----	----	.4	----	6.2	.8	----
28	6421	×	----	----	×	----	----	----	×	----	×	----	0	0	.7	.7	----	----	----
29	6429	----	×	----	×	----	×	----	----	----	×	----	0	0	.6	.7	3.2	----	4.7
30	6414	----	×	----	×	----	----	----	×	----	×	----	×	×	.5	.7	2.7	----	3.6
31	6416	----	×	----	×	----	----	×	----	----	----	----	0	0	----	1.0	----	----	----
32	6420	----	×	----	×	----	----	----	×	×	----	----	×	×	.8	.5	----	----	----
33	6428	×	----	----	----	×	----	×	----	----	×	----	0	0	.7	1.0	4.3	----	----
34	6425	----	×	----	×	----	----	----	×	×	----	----	0	0	.3	.7	----	----	----
35	6421	----	----	×	×	----	----	×	----	----	×	----	×	0	.65	.9	----	----	----
36	6426	----	×	----	×	----	×	----	----	----	----	×	0	0	.6	1.0	2.5	----	1.5
		5	27	4	34	2	5	6	4	3	11	2	6	3	----	----	----	----	----

Line:
- 8. Two deep grooves in upper surface 6 cm wide.
- 9. Two round impressions in handle.
- 24. Hole tempered.
- 31. Beautiful rivet hole in side wall.
- 32. Lip rolled outward.
- 34. Flares sharply in upper quarter of rim.
- 36. Probably a lug below lip.

CHART XIX.—SITE NO. 11—SHERDS WITH LUGS

[Catalog Nos. 6414-6429]

	Catalog no.	Hardness			Texture		Surface finish		Shape of rim		Shape of lip			Color		Thickness			Lugs				
		2	2-2.5	2.5	MF	M	CW P	S	St.	Sl. Fl.	N&R	R	F&R	SBI	SBE	Lip	Rim	Sh.	L.	H.	W.	To lip	Below lip
																cm	*cm*	*cm*	*cm*	*cm*	*cm*		
1	6420		×		×		×			×		×		0	0	0.65	1.0	0.8		1.9	2.0	×	
2	6427		×			×	×		×		×			0	×	.5	1.1		3.5	1.6	2.0		×
3	6424		×		×		×		×			×		×	0	.6	.9	.7	2.5	1.5	1.9	×	
4	6418		×			×		×		×			×	0	0	.7	1.0	1.2	2.2	1.9	1.8		×
5	6421		×		×		×		×				×	0	0	.6	.5		2.5	1.7	1.6	×	
6	6425	×				×	×		×				×	0	0	.4	.9	1.1	3.2	1.5	1.4		×
7	6428		×		×		×		×			×		0	0	.7	1.1		4.2	2.5	3.1		×
8	6421			×	×		(?)		×				×	0	0	.7	.8		4.1	2.0	2.4		×
9	6422		×		×		(?)		×		×			0	0	.4	1.1		[1] 6.2	1.6	2.6		×
10	6424		×			×	×			×			×	0	0	.85	1.2	1.3	7.1	2.1	2.9		×
11	6427		×		×		×			×	×			0	0	.6	1.1	.9	5.9	2.4	3.2		×
12	6424	×			×			×	×				×	×	0	.6	.8	1.1	6.3	1.6	2.2		×
13	6417		×		×			×	×				×	×	×	.7	.8	.9	4.7	1.7	2.1		×
14	6419			×	×			×	×		×			0	0	.4	.7		4.3	2.2	2.6		×
15	6421		×		×		×			×			×	0	0	.5			5.4	2.5	2.5		×
16	6420	×			×		×		×			×		0	0	.6	1.0	.7	2.7	1.5	1.8		×
17	6415		×		×		(?)		×			×		×	0	.7	.9		4.2	2.5	3.0		×
18	6419	×			×			×	×			×		0	0	.6	.6	.75	3.7	1.3	2.2		×
19	6420		×		×			×		×	×			0	0	.5	1.3	.8	5.7	1.5	2.3		×
20	6423		×		×		(?)		×			×		0	0	.8	.8		4.5	2.2	2.4		×
21	6418	×			×		×		×			×		×	0	.7	.7		5.8	1.1	2.4		×
22	6429			×	×		×		×				×	×	0	.5	.6	.5	2.0	1.0	1.8		×
23	6425		×		×		(?)		×			×		0	0	.3	1.0		6.8	1.8	2.7		×
24	6427		×		×		(?)		×		×			×	0	.6	1.0		5.0	1.5	2.3		×
25	6418		×		×		×		×		×			×	0	.4	.6		3.5	1.2	1.8		×
26	6415		×		×		×		×				×	×	0	.6			4.8	2.5	3.5		×
27	6419		×		×		(?)		×			×		0	×	.7			4.1	1.8	2.7		×
28	6424	×			×			×	×			×		×	0	.5	.8		3.8	2.0	2.9		×
29	6419	×			×			×		×	×			×	0	.5	.8		5.1	1.6	2.4		×
30	6421		×		×		(?)		×			×		×	0	.7	.7		2.7	1.8	1.2		×
31	6418		×		×			×	×			×		0	0	.45	.45		4.3	1.4	1.8		×
32	6415		×		×		×			×			×	×	×	.4	.5	.5	[1] 5.6	1.8	1.3		×
33	6415		×		×		(?)			×			×	0	0	.9	.9		8.3	1.6	2.2	×	
34	6419	×			×		×		×		×			0	0	.6	[1]1.6		6.9	1.8	2.6	×	
35	6414		×			×	×			×			×	×	×	1.0	1.2	.9	7.0	1.7	2.3	×	

Chart XIX.—Site No. 11—Sherds With Lugs—Continued

	Catalog no.	Hardness			Texture		Surface finish		Shape of rim		Shape of lip			Color		Thickness			Lugs				
		2	2–2.5	2.5	MF	M	CW P	S	St.	Sl. Fl.	N&R	R	F&R	SBI	SBE	Lip	Rim	Sh.	L.	H.	W.	To lip	Below lip
																cm	cm	cm	cm	cm	cm		
36	6427	----	----	×	×	----	×	----	----	×	----	×	----	0	0	0.7	0.7	0.5	8.2	2.0	2.3	×	----
37	6421	----	×	----	×	----	----	×	×	----	----	×	----	×	0	.8	.8	----	4.1	1.7	2.4	×	----
38	6425	----	----	×	----	×	×	----	×	----	----	(?)	----	0	0	----	1.3	----	7.6	2.9	3.4	×	----
39	6417	----	×	----	----	×	×	----	×	----	----	×	----	0	×	.9	1.0	.7	3.5	2.0	2.2	×	----
40	6426	----	×	----	×	----	×	----	×	----	----	×	----	0	0	.5	.8	----	2.8	2.7	2.6	×	----
41	6419	----	×	----	F	----	----	×	×	----	×	----	----	×	×	.3	.6	.3	3.3	1.2	1.4	×	----
42	6425	----	×	----	×	----	(?)	----	×	----	×	----	----	×	0	.5	.7	----	2.4	2.4	1.5	×	----
43	6414	----	×	----	×	----	×	----	×	----	----	(?)	----	0	0	----	.9	----	6.1	1.8	2.1	×	----
44	6414	----	×	----	×	----	×	----	×	----	----	----	×	0	0	.6	.8	----	6.5	2.3	2.8	×	----
45	6422	----	×	----	×	----	×	----	×	----	----	(?)	----	×	0	----	1.0	----	4.3	1.4	2.0	×	----
46	6417	----	×	----	----	×	×	----	×	----	×	----	----	0	0	.6	.9	.9	5.1	2.2	2.7	×	----
47	6416	----	----	×	×	----	(?)	----	×	----	----	×	----	0	0	.7	----	----	4.0	2.0	2.5	×	----
48	6420	----	×	----	×	----	×	----	×	----	×	----	----	0	0	.5	1.0	.8	2.2	1.7	2.0	×	----
49	6421	----	×	----	×	----	(?)	----	×	----	----	(?)	----	0	0	----	----	----	4.2	[1] 2.5	[1] 4.2	(?)	----
50	6419	----	×	----	×	----	(?)	----	(?)	----	----	(?)	----	(?)	(?)	----	----	----	7.1	1.5	4.2	×	----
51	6420	----	×	----	F	----	----	×	Inc.	----	×	----	----	0	0	.3	.6	----	2.0	1.7	1.2	----	×
52	6424	×	----	----	×	----	----	×	×	----	×	----	----	×	0	.45	.9	----	4.3	2.0	2.3	----	×
		9	37	6	42 F/2	8	26	13	39	11	15	18	14	19	7	----	----	----	----	----	----	20	31

---

[1] Estimated.

Line:
1. Two small lugs.
2. Two small lugs.
3. Two small lugs.
5. Two small lugs.
6. Two small lugs.
21. Hole tempering.
50. Ducktail (?).
52. Hole tempered.

CHART XX.—SITE NO. 10—JAR RIMS, TYPE B

[Catalog Nos. 6540-6545]

	Catalog no.	Hardness			Texture			Surface finish			Shape of rim				Shape of lip			Thickness			Color		Temper
		2	2-2.5	2.5	F	MF	M	CWP	CWP & S	S	St.	Sl. Fl.	Fl.	Outer rim strip	N & R	R	F & R	L	R	Sh.	SBI	SBE	Hole
																		cm	*cm*	*cm*			
1	6544		X			X			X		X					X		0.6	0.9	0.5	X	0	X
2	6545		X			X			X			X		1.8		X		.7	1.2	.8	0	0	
3	6545		X			X				X		X		1.8		X		.7	.7	.5	0	0	
4	6545		X			X				X	X			3.0			X	.7	1.1		0	X	
5	6544		X			X				X	X			2.9			X	.7	.7	.8	0	X	
6	6545		X			X				X	X				X			.45	1.0	.6	0	X	
7	6545		X			X				X	X			3.3		X		.6	1.1	1.3	X	X	
8	6545	X				X				X		X				X		.5	.7	.8	0	X	
9	6540			X		X			X		X					X		.7	1.0		0	0	
10	6545		X			X				X		X				X		.7	1.2		0	X	
11	6545		X			X				X				2.2			X	.6	.8		0	0	
12	6545		X			X			X			X			X			.4	.8	.7	X	0	
13	6545		X			X				X	X			1.5		X		.7	1.0		X	0	
14	6545	X				X			X		X			2.8		X		.9	.9		0	0	
15	6543		X			X				X	X			1.9	X			.45	.7		0	X	
16	6540	X				X				X	X						X	.5	.7	.6	X	X	X
17	6544			X		X			X		X					X		.6	.9		0	0	
18	6541	X					X			X	X					X		1.1	1.2		0	0	
19	6544		X			X				X		X		3.0		X		.6	1.1	1.1	0	0	
20	6540		X			X			X		X						X	.6	.8	.9	0	X	
21	6540		X			X		X			X					X		.4	.7	.5	0	X	
22	6545	X				X				X	X					X		.6	.7		0	0	
23	6545			X		X		X				X				X		.5	.7	.8	X	0	
24	6543	X				X				X	X					X		.6	.8		0	0	
25	6541		X			X				X	X			2.4		X		.7	1.0		0	0	
26	6543	X				X				X	X				X			.6	1.2		X	0	
27	6545	X				X				X	X					X		.55	.65		0	0	
28	6543	X					X			X	X			4.0	X			.7	1.5		0	0	X
29	6544		X			X			X		X			1.8		X		.7	1.0		X	0	
30	6541	X				X				X	X			2.3		X		.7			X	X	
31	6544	X				X			X		X			2.5		X		.7	1.0		X	X	
32	6543	X				X				X			X		X			.2	.7	.6	X	X	
33	6542	X				X			(?)		X					X		.8	1.2		0	X	
34	6545		X			X			X			X			X			.3	.6	.7	X	0	

Chart XX.—Site No. 10—Jar Rims, Type B—Continued

	Catalog no.	Hardness			Texture			Surface finish			Shape of rim				Shape of lip			Thickness			Color		Temper
		2	2–2.5	2.5	F	MF	M	CWP	CWP & S	S	St.	Sl. Fl.	Fl.	Outer rim strip	N & R	R	F & R	L	R	Sh.	SBI	SBE	Hole
																		cm	*cm*	*cm*			
35	6545	----	×	----	----	×	----	----	----	×	----	×	----	----	×	----	----	0.4	0.7	0.5	0	×	----
36	6543	----	×	----	----	×	----	----	----	×	×	----	----	----	----	×	----	.7	1.0	----	×	×	----
37	6544	×	----	----	----	×	----	----	----	×	×	----	----	----	×	----	----	.5	.8	.6	×	0	×
38	6543	×	----	----	----	×	----	----	----	×	----	×	----	----	----	----	×	.7	.8	----	×	0	×
39	6544	----	×	----	----	×	----	----	×	----	----	×	----	----	----	×	----	.5	.7	.5	×	×	----
40	6543	×	----	----	----	×	----	----	----	×	×	----	----	1.3	----	×	----	.5	----	----	----	0	----
41	6545	×	----	----	----	×	----	----	×	----	×	----	----	2.5	----	----	×	1.0	.7	----	0	0	----
42	6545	×	----	----	----	×	----	----	----	×	×	----	----	1.8	----	×	----	.7	.8	----	0	0	----
43	6544	----	----	×	----	×	----	----	×	----	×	----	----	2.6	----	----	×	.7	.7	----	0	0	----
44	6545	----	×	----	----	×	----	----	×	----	×	----	----	2.6	×	----	----	.4	.9	----	0	×	----
45	6545	×	----	----	----	×	----	----	×	----	×	----	----	1.7	----	×	----	.7	1.0	----	0	0	----
46	6545	----	×	----	----	×	----	----	----	×	×	----	----	3.7	----	×	----	.6	.8	----	0	0	----
47	6543	×	----	----	----	×	----	----	×	----	×	----	----	----	----	×	----	.6	.75	----	×	0	×
48	6543	×	----	----	----	×	----	----	----	×	×	----	----	----	----	----	×	.6	1.0	----	0	0	×
49	6544	----	×	----	----	×	----	----	----	×	×	----	----	2.2	×	----	----	.5	.9	----	0	0	----
50	6541	----	×	----	----	×	----	----	----	×	×	----	----	2.5	----	----	×	.6	.8	----	×	0	----
51	6544	----	×	----	----	×	----	×	----	----	----	×	----	----	----	×	----	.6	.7	.6	0	0	×
52	6541	×	----	----	----	×	----	----	----	×	×	----	----	2.5	----	×	----	.9	.8	.7	0	0	----
53	6543	×	----	----	----	×	----	----	----	×	×	----	----	----	----	×	----	.7	.8	----	0	0	----
54	6544	----	×	----	----	×	----	----	×	----	----	×	----	----	×	----	----	.5	.6	.7	×	×	----
55	6543	----	×	----	----	×	----	----	----	×	----	×	----	2.1	----	×	----	.6	1.1	----	0	0	----
56	6543	----	×	----	×	----	----	----	----	×	×	----	----	----	----	×	----	.6	.6	----	0	0	----
57	6543	×	----	----	----	×	----	----	----	×	----	----	----	----	×	----	----	.5	.7	----	×	×	----
58	6544	----	----	×	----	×	----	----	----	×	×	----	----	2.9	----	----	×	.6	.8	----	0	0	----
59	6544	×	----	----	----	----	×	----	----	×	×	----	----	2.7	----	×	----	.8	1.3	----	0	0	----
60	6543	×	----	----	----	×	----	----	----	×	×	----	----	1.5	----	----	×	.5	1.0	----	×	0	----
61	6545	----	×	----	----	×	----	----	----	×	×	----	----	----	×	----	----	.5	.7	----	×	×	----
62	6545	----	×	----	----	×	----	----	×	----	----	×	----	----	×	----	----	.3	.6	.6	×	×	----
63	6543	×	----	----	----	×	----	----	----	×	----	×	----	----	----	×	----	.7	.7	----	0	×	×
64	6543	×	----	----	----	×	----	----	----	×	×	----	----	1.9	×	----	----	.4	.7	----	×	0	×
65	6543	×	----	----	----	×	----	----	----	×	×	----	----	----	----	×	----	.5	.9	----	0	0	×
66	6543	×	----	----	----	×	----	----	----	×	----	----	----	2.6	----	----	×	.7	.8	----	0	0	×
67	6543	×	----	----	----	×	----	----	----	×	----	×	----	----	×	----	----	.4	.6	----	×	0	×
68	6545	----	×	----	----	×	----	----	----	×	×	----	----	----	----	×	----	.7	----	----	0	0	----
69	6543	×	----	----	----	×	----	----	----	×	×	----	----	----	----	----	×	.6	.8	----	0	0	×
70	6545	----	×	----	----	×	----	----	×	----	----	×	----	----	×	----	----	.4	.6	.6	×	×	----

71	6543	----	------	×	----	×	----	------	------	×	×	------	------	------	----	------	×	.65	.65	------	0	0	------
72	6542	×	------	------	----	×	----	------	×	----	×	------	------	1.5	----	×	------	.5	------	------	0	×	------
73	6543	×	------	------	----	×	----	------	------	×	×	------	------	------	----	×	------	.6	------	------	0	×	×
74	6543	×	------	------	----	×	----	------	×	----	×	------	------	------	----	×	------	.6	.7	.7	×	0	------
Total	------	35	33	6	1	70	3	3	21	49	52	18	1	------	18	41	15	------	------	------	27	26	15

Line:
3. Angle between rim and shoulder.
4. Cord-wrapped paddle marking on body.
12. No smoothed rim area.
18. Rim height 0.7 cm.
19. Lip leans outward—O. R. S. thickness 1.7 cm.
20. Almost an angled shoulder.
22. Almost an angled shoulder.
32. Short rim.
52. Outer rim strip thickness 1.3 cm.
54. Upper rim horizontal.
55. Lip slants outward.
61. Slightly thickened upper rim.
62. Small vessel—everted lip.
70. Small vessel—everted lip.

CHART XXI.—SITE No. 10—JAR RIMS, TYPE A

[Catalog Nos. 6540–6545]

	Catalog no.	Hardness		Texture	Surface finish			Shape of rim			Shape of lip			Thickness		Flat rim	Color	
		2	2–2.5	MF	CWP	CWP & S	S	St.	Sl. Fl.	Rim band	N & R	R	F & R	Lip	Rim	Thickness	SB I	SB E
										cm				*cm*	*cm*	*cm*		
1	6544	----	×	×	×	------	----	×	----	2.0	-----	×	-----	0.8	1.0	1.9	0	×
2	6544	----	×	×	-----	------	×	×	----	2.1	×	----	-----	.4	.7	1.6	0	0
3	6544	----	×	×	-----	------	×	----	(?)	1.8	×	----	-----	.5	.8	2.2	0	×
4	6544	----	×	×	-----	×	----	----	×	2.0	×	----	-----	.4	1.0	1.6	0	0
5	6544	×	-----	×	×	------	----	×	----	2.5	-----	×	-----	.6	1.3	2.3	0	×
6	6545	----	×	×	-----	------	×	----	×	-----	×	----	-----	.6	1.0	-------	×	×
7	6544	----	×	×	×	------	----	×	----	1.6	-----	×	-----	.6	.8	1.9	0	0
8	6544	----	×	×	-----	------	×	×	----	3.0	-----	×	-----	.6	.9	2.1	×	0
9	6544	----	×	×	-----	×	----	----	×	1.2	-----	×	-----	.5	1.1	1.5	0	0
10	6544	----	×	×	-----	------	×	×	----	1.6	×	----	-----	------	.8	1.2	×	×
11	6544	×	-----	×	×	------	----	×	----	-----	-----	×	-----	.5	.85	1.8	0	0
12	6541	×	-----	×	×	------	----	×	----	-----	-----	×	-----	.8	1.0	1.9	×	0
13	6544	----	×	×	×	------	----	×	----	-----	×	----	-----	.4	.7	1.1	×	×
14	6544	----	×	×	-----	×	----	×	----	1.6	-----	----	×	.6	.9	1.4	0	0
15	6544	×	-----	×	-----	×	----	----	×	2.0	-----	×	-----	.6	.8	1.4	×	0
16	6543	×	-----	×	-----	------	×	----	×	-----	-----	----	×	.9	.9	-------	0	0
17	6545	----	×	×	-----	------	×	×	----	-----	×	----	-----	.4	.35	1.3	0	0
18	6543	×	-----	×	-----	------	×	----	(?)	-----	-----	×	-----	.6	-----	1.7	×	0
19	6544	----	×	×	-----	×	----	×	----	-----	-----	×	-----	.65	.7	1.8	0	0
20	6541	×	-----	×	-----	------	×	----	(?)	-----	-----	×	-----	.5	-----	2.0	×	0
		7	13	20	6	5	9	12	5	-----	7	11	2	-----	-----	-------	8	6

Line:
6. Short-angled rim on a wide-mouth jar.
12. Hole temper.

CHART XXII.—SITE NO. 10—SHERDS WITH LUGS

[Catalog Nos. 6540–6545]

	Catalog no.	Hardness			Texture		Surface finish		Shape of rim		Shape of lip			Color		Thickness		Lug description				
		2	2–2.5	2.5	MF	M	CW P & S	S	St.	Sl F	N & R	R	F & R	SBI	SBE	L	R	L	H	W	To lip	Below lip
																cm	*cm*	*cm*	*cm*	*cm*		*cm*
1	6544	------	×	------	×	------	------	------	------	------	------	------	------	0	0	------	------	5.0	1.4	3.8	×	------
2	6544	------	×	------	×	------	------	×	------	×	------	×	------	×	0	0.5	0.9	4.6	1.7	2.7	------	2.0
3	6543	×	------	------	×	------	------	×	×	------	------	------	------	0	0	------	1.1	------	1.5	2.4	×	------
4	6544	------	×	------	×	------	×	------	×	------	×	------	------	0	0	.4	.9	4.8	1.7	2.5	------	.8
5	6544	×	------	------	×	------	------	×	×	------	------	×	------	------	×	------	------	5.4	2.4	3.3	------	1.7
6	6541	×	------	------	×	------	------	×	×	------	------	------	×	0	0	.7	.9	6.0	2.1	2.6	------	2.0
7	6544	×	------	------	×	------	×	------	×	------	------	×	------	------	0	.7	------	4.2	2.5	------	------	1.8
8	6544	------	×	------	×	------	------	×	×	------	------	------	×	0	0	.6	------	3.8	1.8	2.5	------	.8
9	6544	------	×	------	------	×	×	------	×	------	------	------	×	0	0	.65	1.1	3.9	1.7	2.2	------	.6
10	6544	------	×	------	×	------	------	×	×	------	------	×	------	0	0	.5	.6	3.7	1.1	2.3	×	------
11	6543	×	------	------	×	------	------	×	×	------	------	------	------	×	0	------	.6	2.7	1.4	2.1	×	------
12	6544	×	------	------	×	------	×	------	------	×	×	------	------	0	×	.3	.9	3.3	1.7	2.3	------	.6
13	6544	------	×	------	×	------	------	×	×	------	------	------	------	0	0	------	.9	------	1.3	2.6	×	------
14	6545	------	×	------	×	------	------	×	×	------	------	------	------	0	0	------	------	4.2	1.6	3.0	×	------
15	6545	------	×	------	×	------	------	×	×	------	×	------	------	0	×	.4	.4	3.7	1.7	2.0	×	------
16	6545	×	------	------	×	------	------	×	×	------	×	------	------	0	0	.5	.9	5.3	1.5	2.3	------	1.2
17	6545	------	------	×	------	×	------	×	×	------	------	------	×	×	×	.7	.8	5.1	1.9	3.3	------	.8
18	6543	×	------	------	×	------	------	×	×	------	------	------	------	×	×	------	.8	------	------	------	------	×
19	6541	×	------	------	×	------	------	×	×	------	------	×	------	0	0	.6	------	------	------	------	×	------
20	6545	×	------	------	×	------	------	×	×	------	------	×	------	×	×	.5	.65	------	------	------	×	------
		10	9	1	18	2	4	15	17	2	4	6	4	5	6	------	------	------	------	------	9	11

Line:
5. Lip slopes outward.
9. Outer rim strip 2.8 cm high.
10. Outer rim strip 1.5 cm high.
11. Outer rim strip 2.3 cm high—hole temper.
12. Outer rim strip 1.5 cm high—hole temper.
16. Lip notched above lug.
17. Outer rim strip 2.4 cm high.
18. Two rim nodes—hole temper.
19. Two rim nodes—hole temper.
20. Two rim nodes—hole temper.

CHART XXIII.—SITE NO. 10—BOWLS

[Catalog Nos. 6540–6545]

	Cat. no.	Hardness		Texture		Surface finish		Shape of lip			Thickness		Color	
		2	2-2.5	F	MF	CW PS	S	N & R	R	F & R	Lip	Rim	SBI	SBE
											cm	*cm*		
1	6541	----	X	----	X	----	X	----	X	----	0.75	0.75	0	0
2	6544	----	X	----	X	----	X	X	----	----	.5	.7	0	0
3	6545	X	----	X	----	----	X	----	X	----	.5	.5	0	0
4	6545	X	----	----	X	----	X	----	----	X	1.0	.8	0	0
5	6543	----	X	----	X	----	X	----	X	----	.5	.7	0	0
6	6541	X	----	----	X	----	X	----	X	----	.7	1.1	X	0
7	6544	----	X	----	X	----	X	X	----	----	.5	.55	0	0
8	6543	----	X	----	X	----	X	----	----	X	.4	.5	0	0
9	6544	----	X	----	X	X	----	----	X	----	.6	.9	X	0
		3	6	1	8	1	8	2	5	2	----	----	2	----

Line:
3. Hole temper.
4. Lip flattened and extended exteriorly.
6. May not be a bowl rim.
7. Small rim—Lip rounded, node-thickness to inner surface 1.5 cm.
8. Small rim—Lip extended, node-thickness to inner surface 1.1 cm.
9. Almost beaker shape.

CHART XXIV.—SITE NO. 10—SALT PANS

[Catalog Nos. 6540–6545]

	Catalog no.	Hardness			Texture		Shape of lip			Color		Type of weave		Dimensions		Thickness	
		2	2-2.5	2.5	MF	M	N & R	R	F & R	SBI	SBE	Plain twining	Twilled twining	Width of 5 warp	Width of 5 weft	Lip	Rim
														cm	*cm*	*cm*	*cm*
1	6545	----	----	X	X	----	----	----	X	X	0	----	X	0.8	1.4	1.4	0.8
2	6544	----	X	----	X	----	----	X	----	0	X	----	X	----	1.4	.7	1.1
3	6541	----	X	----	X	----	----	----	X	0	0	X	----	1.0	----	1.4	1.0
4	6544	----	X	----	X	----	----	X	----	0	X	X	----	1.2	----	2.0	.7
5	6543	X	----	----	X	----	----	X	----	0	X	X	----	----	----	2.9	1.0
6	6543	X	----	----	X	----	----	----	X	0	0	X	----	1.1	2.2	1.2	.7
7	6544	----	X	----	----	X	----	X	----	0	0	X	----	----	----	1.7	1.3
8	6544	X	----	----	X	----	----	----	X	0	0	----	----	----	----	1.7	.6
9	6544	----	X	----	X	----	----	X	----	0	0	X	----	1.0	3.4	2.3	.8
10	6545	----	X	----	X	----	----	X	----	X	X	----	----	----	----	1.3	.9
11	6545	----	X	----	X	----	----	X	----	0	X	X	----	.9	2.8	1.0	1.0
12	6544	----	X	----	X	----	----	----	X	X	X	X	----	1.1	2.7	2.7	.7
13	6543	X	----	----	X	----	----	----	X	0	X	----	----	----	----	2.7	.7
14	6544	X	----	----	----	X	----	X	----	0	0	----	----	----	----	1.5	1.3
15	6545	----	X	----	X	----	----	X	----	X	X	----	----	----	----	.7	1.1
16	6541	X	----	----	X	----	X	----	----	0	0	X	----	1.1	3.3	.3	.6
17	6545	----	X	----	X	----	----	X	----	0	X	X	----	1.0	2.6	1.3	.7
18	6545	X	----	----	X	----	----	----	X	0	0	----	----	----	----	1.5	1.2
19	6544	----	X	----	X	----	----	X	----	0	0	X	----	.8	2.6	1.8	.5
20	6541	X	----	----	X	----	----	X	----	0	0	----	----	----	----	1.0	.8
21	6545	X	----	----	X	----	----	----	----	X	0	X	----	1.1	3.5	----	.6
22	6545	----	X	----	X	----	----	----	----	0	0	X	----	1.0	3.1	----	1.0
23	6541	----	X	----	X	----	----	----	----	0	0	X	----	1.2	3.7	----	1.0
24	6543	----	X	----	X	----	----	----	----	0	0	X	----	.9	2.3	----	1.0
25	6545	X	----	----	X	----	----	----	----	0	0	X	----	.9	3.3	----	1.0
26	6545	----	X	----	X	----	----	----	----	X	0	X	----	1.1	2.9	----	.75
27	6541	----	----	X	X	----	----	----	----	0	0	----	X	----	1.0	----	1.2
28	6541	X	----	----	----	X	----	----	----	X	0	X	----	1.0	1.5	----	.9-1.5
29	6545	X	----	----	X	----	----	----	----	0	0	----	----	----	1.6	----	.8
30	6545	----	X	----	X	----	----	----	----	0	0	X	----	1.0	3.2	----	.9
		12	16	2	27	3	1	12	7	7	9	19	3	----	----	----	----

Line:
1 and 2. Close weave.
5 and 6. Hole temper.
7. Lip slopes inward—surface partially smooth.
9. Lip slopes outward.
12 and 13. Centrally depressed in center of lip.
14. Surface roughly smoothed.
15. Upper rim ridge—surface roughened.
16. Atypical sherd.
17 and 18. Lip slopes outward—hole temper.
23. Red paint on interior (?).

CHART XXV.—SITE NO. 19—JAR RIMS

[Catalog Nos. 6550-6553]

	Catalog no.	Hardness			Texture			Surface finish		Shape of rim		Shape of lip			Color		Thickness		
		2	2-2.5	2.5	F	MF	M	CW P & S	S	St.	Sl. Fl.	N & R	R	F & R	SBI	SBE	Lip	Rim	Sh.
																	cm	*cm*	*cm*
1	6552	----	----	×	----	×	----	----	×	×	----	----	----	----	0	0	----	0.7	0.65
2	6550	----	×	----	----	×	----	----	×	×	----	----	----	----	0	0	----	.8	----
3	6552	----	----	×	----	×	----	----	×	×	----	×	----	----	0	0	0.4	.7	.6
4	6550	×	----	----	----	×	----	----	×	×	----	----	----	×	×	0	.6	1.0	.6
5	6550	----	×	----	----	×	----	----	×	×	----	----	×	----	×	×	.5	.65	.5
6	6551	----	----	×	×	----	----	----	×	×	----	×	----	----	×	×	.45	.6	.4
7	6550	----	×	----	----	×	----	----	×	×	----	----	----	×	×	×	.4	.6	.6
8	6551	----	----	×	----	×	----	----	×	×	----	----	----	×	0	0	.6	1.0	.6
9	6551	----	×	----	----	×	----	----	×	×	----	----	×	----	0	×	.6	1.0	----
10	6551	----	×	----	----	×	----	----	×	×	----	----	----	×	×	0	.65	.9	6.5
11	6550	----	----	×	----	----	×	----	×	×	----	----	----	×	0	0	.6	1.0	.6
12	6551	----	×	----	----	×	----	----	×	×	----	----	×	----	0	0	.7	1.0	.7
13	6552	----	×	----	----	×	----	----	×	----	×	----	----	×	0	0	.8	1.0	.6
14	6552	----	----	×	----	×	----	----	×	×	----	----	----	×	0	0	.65	.8	.75
15	6553	×	----	----	×	----	----	----	×	----	×	×	----	----	×	0	.33	.55	.3
16	6550	----	----	×	----	×	----	----	×	×	----	----	×	----	×	0	.5	.7	.7
17	6552	----	----	×	----	×	----	----	×	×	----	----	×	----	0	0	.6	1.1	----
18	6551	----	----	×	----	×	----	----	×	----	×	----	----	×	0	0	.7	.9	.5
19	6550	----	×	----	----	×	----	----	×	----	×	----	----	×	×	0	.5	.8	----
20	6550	----	×	----	----	×	----	----	×	----	×	×	----	----	0	×	.2	.65	.45
21	6550	----	×	----	----	×	----	----	×	×	----	----	×	----	0	0	.5	.8	.7
22	6550	×	----	----	----	×	----	----	×	×	----	----	----	×	0	×	.7	.9	----
23	6552	----	----	×	----	×	----	×	----	×	----	----	×	----	0	×	.6	.8	.8
24	6551	----	×	----	----	×	----	----	×	----	×	----	×	----	×	×	.55	.7	----
25	6552	----	×	----	----	×	----	----	×	×	----	----	----	×	×	×	.7	.7	.5
26	6552	----	----	×	----	×	----	×	----	×	----	----	----	×	×	0	.4	.9	----
27	6552	----	×	----	----	×	----	×	----	×	----	----	----	×	×	0	.6	.8	.7
28	6550	----	----	×	----	×	----	----	×	----	×	×	----	----	×	×	.3	.6	.3
29	6552	----	----	×	----	×	----	----	×	×	----	----	×	----	0	0	.5	.6	.5
30	6552	----	----	×	----	×	----	----	×	×	----	×	----	----	0	0	.5	.7	----
31	6551	----	×	----	----	×	----	----	×	×	----	----	×	----	×	×	.5	.6	----
32	6552	----	----	×	----	×	----	----	×	×	----	----	----	×	×	×	.6	.6	----
33	6552	----	----	×	----	×	----	×	----	×	----	----	×	----	0	0	.6	.5	----
34	6552	----	×	----	----	×	----	----	×	×	----	----	×	----	×	×	.7	.9	----
		3	15	16	2	31	1	4	30	27	7	6	12	14	16	13	----	----	----

Line:
1. Had strap handle attached to lip.
2. Had strap handle attached to lip 5.5 cm.
3. Had lug handle attached to lip.
4. Hole temper—large vessel, rim 7 cm high.
6. Grit temper—some mica; smoothed pebble.
15. Small rim lip lug 2.5 cm. long—rim raised.
24. Short-bodied vessel.
28. Small vessel.
29. Small vessel.

CHART XXVI.—SITE No. 19—LUGS ON JARS

[Catalog Nos. 6550–6553]

	Catalog no.	Hardness			Texture		Surface finish		Shape of rim		Shape of lip			Color		Thickness		Lug description				
		2	2–2.5	2.5	MF	M	CW P & S	S	St.	Sl. Fl.	N & R	R	F & R	SBI	SBE	Lip	Rim	L	H	W	To lip	Below lip
																cm	*cm*	*cm*	*cm*	*cm*		*cm*
1	6550		X			X		X	X				X	0	0	0.65	0.8		1.3	2.3		1.0
2	6550			X	X		X		X			X		X	X	.8	.7	7.0	2.4	2.3	X	
3	6553	X			X			X	X					0	0		.7		.8	1.1	X	
4	6550			X	X			X	X				X	X	X	.5	.7		1.9	1.3		.2
5	6551		X		X			X	X				X	X	0	.6	1.0	3.0	1.4			.8
6	6550		X		X		X		X		X			0	X	.35	.6		1.0	1.2	X	
7	6550		X		X			X		X		X		0	0	.4	1.0		1.1	1.4		.6
8	6551			X	X			X		X		X		X	X	.5	.6		.4	.9		.2
9	6551			X	X			X	X				X	0	0	.8	.8	[1]7.0	1.5	2.3		1.0
10	6551		X		X			X	X				X	X	X	.6	.5		1.4	2.0	X	
11	6550		X		X			X		(?)		X		0	0	.5	.7	[1]9.5	1.2	2.1	X	
12	6552			X	X			X	X		X			X	0	.5	.8	3.1	1.1	1.5		.2
13	6551		X		X			X	X				X	0	0	.5	.7	4.0	1.5	2.3		.5
14	6552		X		X			X	X			X		0	0	.5	.75	4.1	1.5	1.8		.3
15	6551	X			X			X	X			X		X	0	.5	.8	6.0	1.6	2.5		.2
16	6552			X		X		X	X			X		0	0	.65	1.0		1.7	2.3		1.0
17	6552		X		X			X		(?)			X	0	X	.7	.7		1.4	2.2		.6
18	6550			X	X			X	X				X	0	0	.6	.8	5.1	1.3	2.2		1.3
19	6550		X		X			X	X			X		X	X	.7	.9	6.1	2.5	2.5	X	
20	6550		X		X			X	X				X	0	0	.6	.9	[1]5.5	1.7			.9
21	6550			X	X			X	X			X		0	X	.5	.8	6.1	1.4	1.8		.3
22	6550			X	X			X	X				X	0	0	.6	.7	6.3	1.3	1.8		.7
23	6552			X	X			X	X			X		0	X	.65	.65	4.7	1.8	2.2	X	
24	6551		X		X		X		X				X	0	0	.5	.9	6.0	1.4	2.0	X	
25	6550		X		X		(?)			(?)		(?)		0	0		.8	6.0	1.4	2.5		X
26	6550		X		X			X	X			X		0	X	.8	1.1	5.7	2.0	2.3	X	
27	6552			X	X			X	X				X	0	X	.7	.7	3.7	1.2	1.8		1.0
28	6551		X			X		X	X				X	0	X	.8	.8	8.5	1.4	2.4		.6
29	6550		X		X			X	X			X		0	0	.5	1.0	6.0	2.0	2.8		.5
30	6551		X		X			X	X				X	X	0	.4	.75	4.6	1.3	2.0	X	
31	6552		X		X			X		X	X			X	0	.4	.7	4.0	1.0	1.6		1.0
32	6550			X		X		X	X				X	0	0	.6	.6	3.6	1.5	1.7		1.0
33	6550		X		X			X	X			X		0	0	.5	.6	2.7	1.3	1.5		.4
34	6550	X			X			X	X				X	0	0	.8	1.0	5.4	1.3	2.1		.7

35	6551	X	------	------	X	----	------	X	X	------	------	----	X	X	0	.6	.	------	------	------	------	------
36	6550	----	------	X	X	----	------	X	X	------	------	X	------	0	0	.6	.9	6.2	1.8	2.3	X	------
37	6550	----	X	------	X	----	------	X	------	X	------	----	X	0	0	.5	.8	4.4	1.6	1.7	------	.6
38	6550	----	------	X	X	----	------	X	X	------	------	X	------	0	X	.5	.6	5.0	1.0	1.6	------	.5
39	6550	X	------	------	X	----	------	X	X	------	------	----	X	0	0	.6	.9	4.9	1.4	2.4	------	.8
40	6552	----	------	X	X	----	------	X	------	(?)	------	----	X	0	0	.7	1.0	5.4	1.7	1.9	------	.4
41	6551	----	X	------	X	----	------	X	------	(?)	------	X	------	X	X	.5	.5	2.2	------	------	------	1.1
		5	21	15	37	4	3	37	32	4	3	16	20	12	14	------	------	------	------	------	11	29

[1] Estimated.

Line:
4. Two narrow horizontal ridges.
6. Indented ridge.
8. Small indented band.
15. Hole temper.
25. Upper portion depressed near rim.
34. Hole temper—lip slopes outward.
35. Same as 34.
39. Hole temper.
41. Raised rim—one deep notch.

CHART XXVII.—SITE NO. 19—BOWLS

[Catalog Nos. 6550–6553]

	Catalog no.	Hardness		Texture	Surface finish		Shape of lip			Thickness		Color	
		2–2.5	2.5	MF	CW P & S	S	N & R	R	F & R	L	R	SBI	SBE
										cm	*cm*		
1	6551	×	------	×	------	×	------	----	×	0.6	0.7	×	0
2	6552	×	------	×	------	×	------	----	×	.75	.7	×	×
3	6550	×	------	×	------	×	×	----	------	.4	1.0	0	×
4	6550	------	×	×	------	×	×	----	------	.5	.7	×	0
5	6551	------	×	×	------	×	×	----	------	.5	.6	0	×
6	6550	×	------	×	------	×	------	----	×	.7	.8	×	×
7	6552	×	------	×	------	×	------	----	×	.6	.6	×	×
8	6551	×	------	×	------	×	------	×	------	.65	.8	0	×
9	6550	×	------	×	------	×	------	----	×	.7	.65	×	×
10	6552	×	------	×	------	×	------	----	×	.6	.6	0	0
11	6551	×	------	×	------	×	------	----	×	.5	.8	×	0
12	6550	×	------	×	------	×	------	×	------	.6	.85	0	0
13	6552	×	------	×	×	------	------	----	×	.7	.7	0	0
14	6550	×	------	×	------	×	------	(?)	------	------	1.0	×	0
15	6551	×	------	×	------	×	------	----	×	.5	.7	0	×
16	6550	×	------	×	------	×	------	----	×	.7	.7	0	0
17	6550	×	------	×	------	×	------	----	×	.6	.7	×	0
18	6550	×	------	×	------	×	------	×	------	.5	.5	0	0
19	6552	×	------	×	------	×	------	----	×	.7	.9	×	×
20	6552	------	×	×	------	×	------	----	×	.7	.7	×	×
21	6551	×	------	×	------	×	------	----	×	.75	.6	0	×
22	6550	×	------	×	------	×	------	----	×	.6	.6	×	×
23	6552	------	×	×	------	×	------	----	×	.8	.8	×	×
24	6552	×	------	×	------	×	------	----	×	.6	.6	0	0
25	6552	×	------	×	------	×	------	×	------	.8	.8	×	×
26	6552	×	------	×	------	×	------	----	×	.8	.7	0	0
27	6552	×	------	×	------	×	------	----	×	.5	.7	×	×
		23	4	27	1	26	3	4	19	------	------	15	15

Line:
6. Lip slopes in.
7. Lip slopes in.
8. Surface not as smooth as common.
9. Surface not as smooth as common—lip slopes in.
10. Rim lug 3.8 cm long, 1.1 cm high, 2 cm wide, 5 cm below lip.
11. Rim lug 2 cm long, 1 cm high, 1.2 cm wide, 7 cm below lip.
12. Fragment of rim lug.
13. Rim ridge 8 cm high, 6 cm below lip, 1.4 cm to interior surface.
14. Rim lip lug 1.6 cm high, 2.3 cm wide.
15. Rim lug 3 cm long, 9 cm high, 1.3 cm wide and 5 cm below lip.
16. Rim lip lug 2.1 cm long, 9 cm high, 1.6 cm wide.
17. Notched rim lip ridge.
18. Notched upper rim ridge; distance between 5 notches 2.1 cm.
19. Notched upper rim ridge; distance between 5 notches 1.6 cm.
20. Notched upper rim ridge; distance between 5 notches 3.5 cm.
21. Notched upper rim ridge; distance between 5 notches 2.9 cm.
22. Notched upper rim ridge.
23. Notched upper rim ridge.
24. Notched rim lip ridge; distance between 5 notches 4 cm.
25. Notched rim lip ridge; distance between 5 notches 5.1 cm.
26. Horizontal row of incised circles, 1.5 cm diameter; 1.2 cm apart, 1.7 cm below lip.
27. Small rim ridge just below lip.

CHART XXVIII.—SITE NO. 19—HANDLES

[Catalog Nos. 6550–6553]

	Catalog no.	Hardness		Texture	Handle dimensions		
		2–2.5	2.5	MF	Lateral	Front to back	Height
					cm	*cm*	*cm*
1	6550	×	------	×	3.0	0.6	4.0
2	6550	×	------	×	2.8	.8	--------
3	6552	×	------	×	4.7	.75	--------
4	6550	--------	×	×	4.8	.65	--------
5	6552	--------	×	×	4.5	.65	--------
6	6551	×	------	×	4.2	.6	--------
7	6551	×	------	×	3.8	.7	4.7
8	6551	×	------	×	4.9	.6	--------
9	6552	×	------	×	4.4	.8	--------
10	6550	×	------	×	6.5	1.0	--------
11	6551	--------	×	×	4.2	.65	5.0
12	6552	--------	×	×	4.1	.6	4.7
13	6551	×	------	×	4.7	.65	6.4
14	6550	×	------	×	1.4	1.4	--------
		10	4	14	--------	--------	--------

Line:
1. Contracting sides.
2. Straight sides, outer edges ridged.
4. Contracting sides.
5. Contracting sides.
6. Straight sides.
7. Straight sides.
8. Lower surface tooled with cord-wrapped paddle.
9. Straight sides.
10. Straight sides.
11. Straight sides.
12. Straight sides.
13. Straight sides.
14. Loop handle, hole temper; small knob above lip.

CHART XXIX.—SITE NO. 5—SALT PANS—FABRIC EXTENDS TO LIP

[Catalog Nos. 6546–6549]

	Catalog. no.	Hardness		Texture		Shape of lip			Color		Type of weave		Size of weave		Width of lip	Width of rim
		2	2–2.5	MF	M	N& R	R	F& R	SBI	SB E	Plain twining	Twilled twining	Width of 5 warp	Width of 5 weft		
															cm	*cm*
1	6549	----	×	×	----	-----	----	×	×	0	×	------	1.0	4.1	1.9	0.6
2	6548	----	×	×	----	-----	----	×	0	0	×	------	1.0	4.0	1.8	1.0
3	6549	×	-----	×	----	-----	----	×	0	×	×	------	-------	-------	1.7	.7
4	6549	×	-----	×	----	-----	----	×	0	×	------	------	(?)	-------	1.4	1.0
5	6549	×	-----	×	----	-----	----	×	0	0	×	------	-------	-------	2.0	1.2
6	6546	----	×	×	----	-----	×	-----	0	(?)	------	------	(?)	-------	1.4	(?)
7	6546	----	×	×	----	-----	----	×	0	0	×	------	1.2	-------	1.6	.8
8	6549	----	×	×	----	-----	×	-----	×	×	------	------	(?)	-------	2.5	(?)
9	6547	----	×	×	----	-----	----	×	0	0	------	------	(?)	-------	2.0	1.0
10	6546	----	×	×	----	-----	×	-----	0	×	------	------	(?)	-------	1.4	.7
11	6547	----	×	×	----	-----	×	-----	0	0	------	×	-------	1.6	1.7	.8
12	6549	×	-----	×	----	-----	----	×	0	0	------	------	(?)	(?)	1.0	1.0
13	6549	----	×	-----	×	-----	×	-----	×	0	×	------	(?)	-------	1.4	1.0
14	6549	×	-----	×	----	×	----	-----	0	0	------	------	(?)	-------	.9	1.0
15	6549	----	×	×	----	-----	×	-----	0	0	------	×	.7	3.1	-------	-------
		5	10	14	1	1	6	8	3	4	6	2	-------	-------	-------	-------

Line:
4. Hole tempered.
5. Hole tempered.
6. Outer surface eroded.
11. Weft encloses 2 warp threads alternately.
12. Hole tempering—heavily eroded.
14. Heavily eroded—hole tempering.
15. Zigzag twilled twining.

CHART XXX.—SITE NO. 5—BOWLS

	Hardness		Texture		Shape of lip		Surface finish	Thickness		Color	
	2	2-2.5	F	MF	R	F & R	Smooth	Lip	Rim	SBI	SBE
								cm	*cm*		
1	----	×	----	×	×	----	×	0.6	0.6	0	×
2	×	----	×	----	×	----	×	.6	.6	0	0
3	×	----	----	×	----	×	×	.6	.8	0	0
4	×	----	×	----	----	×	×	.9	.7	0	0
5	×	----	----	×	----	×	×	.7	.7	0	0
6	----	×	×	----	×	----	×	.5	.5	0	0
7	×	----	×	----	×	----	×	.6	.5	×	×
8	×	----	×	----	----	×	×	.7	.5	×	0
9	×	----	×	----	----	×	×	.8	.5	0	0
	7	2	6	3	4	5	9	----	----	2	2

Line 3: Hole tempered.

CHART XXXI.—SITE NO. 5—JAR RIMS

[Catalog Nos. 6546-6549]

	Catalog no.	Temper		Hardness		Texture	Surface finish		Shape of rim			Shape of lip			Color		Thickness	
		H	S	2	2-2.5	MF	CWP & S	S	St.	Sl. Fl.	Fl.	N & R	R	F & R	SBI	SBE	Lip	Rim
																	cm	*cm*
1	----	×	----	×	----	×	----	×	----	×	----	----	×	----	0	0	0.4	0.6
2	6546	×	----	×	----	×	----	×	----	----	×	----	×	----	0	0	.6	.6
3	6549	----	×	----	×	×	----	×	----	×	----	----	×	----	×	×	.5	.7
4	6548	----	×	----	×	×	----	×	----	×	----	----	×	----	0	0	.9	.7
5	6548	×	----	×	----	×	----	×	----	×	----	----	----	×	×	0	.8	.6
6	6546	×	----	×	----	×	----	×	×	----	----	----	----	×	0	×	.9	.7
7	6548	----	×	----	×	×	----	×	----	×	----	----	----	×	×	0	.6	.7
8	6548	×	----	×	----	×	----	×	×	----	----	----	×	----	×	×	.45	.5
9	6546	×	----	×	----	×	×	----	×	----	----	----	×	----	0	0	.9	.8
10	6546	×	----	×	----	×	----	×	×	----	----	----	×	----	0	0	.9	.7
11	6549	×	----	×	----	×	----	×	----	×	----	----	----	×	0	0	.9	.6
12	6547	×	----	×	----	×	----	×	×	----	----	----	×	----	0	0	.7	.7
13	6548	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.6	.7
14	6549	×	----	----	×	×	----	×	----	×	----	----	×	----	0	×	.6	.8
15	6547	×	----	----	×	×	----	×	×	----	----	----	×	----	0	0	.7	1.0
16	6549	×	----	×	----	×	----	×	----	×	----	----	----	×	0	0	.8	.8
17	6549	----	×	×	----	×	----	×	×	----	----	----	----	×	×	0	.8	.6
18	6546	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.6	.6
19	6549	×	----	×	----	×	----	×	----	×	----	----	----	×	×	0	.6	.7
20	6547	×	----	×	----	×	×	----	----	×	----	----	×	----	0	0	.6	.7
21	6549	×	----	×	----	×	----	×	----	----	×	----	----	×	×	×	.6	.6
22	6549	×	----	----	×	×	----	×	×	----	----	----	×	----	×	0	.5	.6
23	6547	×	----	×	----	×	----	×	×	----	----	----	----	×	0	0	.7	.6
24	6546	×	----	×	----	×	----	×	----	×	----	----	----	×	×	0	.8	.7
25	6547	×	----	×	----	×	----	×	----	×	----	----	----	×	0	0	.8	.7
26	6547	×	----	×	----	×	----	×	----	×	----	×	----	----	×	0	.5	.6
27	6549	×	----	----	×	×	----	×	×	----	----	----	----	×	0	×	.7	.5
28	6547	×	----	×	----	×	----	×	×	----	----	×	----	----	0	×	.4	1.0
29	6547	×	----	×	----	×	----	×	×	----	----	----	----	×	×	×	.7	.8
30	6547	×	----	×	----	×	----	×	----	×	----	----	----	×	0	0	1.0	.9
31	6548	----	×	----	×	×	----	×	×	----	----	----	×	----	×	×	.6	.7
32	6546	×	----	×	----	×	----	×	×	----	----	----	×	----	0	0	.8	.6
33	6547	×	----	×	----	×	----	×	×	----	----	----	----	×	×	0	.9	.6
34	6549	×	----	×	----	×	----	×	×	----	----	----	----	×	0	0	.9	.6
35	6549	×	----	×	----	×	----	×	----	×	----	----	----	×	0	×	.7	.7
36	6549	×	----	×	----	×	----	×	×	----	----	----	----	×	×	0	.65	.75
37	6549	×	----	×	----	×	----	×	×	----	----	----	----	×	0	×	.7	.6
38	6546	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.9	----
39	6547	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.6	.8
40	6549	×	----	×	----	×	----	×	----	×	----	----	----	×	0	0	1.0	.7
41	6547	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.9	.7
42	6549	×	----	----	×	×	----	×	----	×	----	×	----	----	0	0	.4	.5
43	6546	----	×	×	----	×	----	×	×	----	----	----	×	----	0	0	.6	.9

CHART XXXI.—SITE NO. 5—JAR RIMS—Continued

[Catalog Nos. 6546–6549]

	Catalog no.	Temper		Hardness		Texture	Surface finish		Shape of rim			Shape of lip			Color		Thickness	
		H	S	2	2–2.5	MF	CWP & S	S	St.	Sl. Fl.	Fl.	N & R	R	F & R	SBI	SB E	Lip	Rim
																	cm	*cm*
44	6549	----	×	----	×	×	----	×	----	×	----	----	----	×	×	0	0.8	0.7
45	6549	----	×	×	----	×	----	×	×	----	----	----	×	----	0	0	.7	.8
46	6549	----	×	----	×	×	----	×	×	----	----	----	----	×	×	0	.7	.6
47	6546	----	×	×	----	×	----	×	----	×	----	----	----	×	0	0	.7	.65
48	6549	----	×	----	×	×	----	×	×	----	----	----	----	×	×	0	.65	.7
49	6546	----	×	×	----	×	----	×	----	×	----	×	----	----	0	0	.45	.7
50	6548	×	----	----	×	×	----	----	----	×	----	----	×	----	0	0	.6	.6
51	6549	----	×	×	----	×	----	×	×	----	----	----	----	×	0	0	1.0	.8
52	6549	----	×	----	×	×	----	×	----	×	----	×	----	----	0	0	.5	.7
53	6549	----	×	×	----	×	----	×	----	×	----	----	×	----	0	0	.6	.6
54	6548	----	×	----	×	×	----	×	×	----	----	----	----	×	0	×	.9	.6
55	6549	----	×	----	×	×	×	----	----	×	----	----	----	×	0	×	.65	.55
56	6546	----	×	----	×	×	×	----	×	----	----	----	----	×	0	0	.9	.6
57	6547	----	×	×	----	×	----	×	----	×	----	×	----	----	0	0	.5	.6
58	6548	----	×	×	----	F	----	×	×	----	----	----	----	×	×	0	.6	.5
59	6549	----	×	----	×	×	----	×	×	----	----	----	×	----	0	×	.6	.65
60	6549	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.7	1.0
61	6549	----	×	×	----	×	----	×	×	----	----	----	----	×	0	0	.7	.8
62	6549	----	×	×	----	×	----	×	×	----	----	----	----	×	0	0	.9	.8
63	6549	×	----	×	----	×	----	×	----	×	----	----	----	×	×	0	.5	.5
64	6548	----	×	----	×	×	----	×	×	----	----	----	----	×	0	0	.9	.6
65	6549	----	×	----	×	×	×	----	----	×	----	×	----	----	0	×	.5	.6
66	6549	----	×	----	×	×	----	×	----	×	----	----	×	----	×	×	.6	.6
67	6547	×	----	×	----	×	----	×	----	×	----	×	----	----	×	0	.5	.6
68	6546	----	×	----	×	×	----	×	×	----	----	----	----	×	0	×	.7	.6
69	6548	----	×	----	×	×	----	×	×	----	----	----	×	----	0	0	.6	.7
70	6549	----	×	×	----	×	----	×	----	----	×	----	×	----	0	0	.5	.6
71	6549	----	×	----	×	×	----	×	----	×	----	----	×	----	0	0	.8	.9
72	6548	----	×	----	×	×	----	×	----	(?)	----	----	×	----	0	0	.7	.8
73	6549	----	×	×	----	×	----	×	----	×	----	----	×	----	0	0	.7	.7
74	6546	----	×	×	----	×	----	×	×	----	----	×	----	----	×	0	.4	.6
75	6549	----	×	×	----	×	----	×	×	----	----	----	×	----	0	×	.6	.7
76	6547	×	----	×	----	×	----	×	×	----	----	----	×	----	0	0	.5	.7
77	6546	----	×	----	×	×	----	×	----	(?)	----	----	×	----	0	0	.6	.7
78	6549	×	----	----	×	×	----	×	----	×	----	----	×	----	0	0	.5	.6
79	6546	×	----	×	----	×	----	×	----	(?)	----	----	×	----	×	×	.65	----
80	6549	----	×	×	----	×	----	×	----	×	----	×	----	----	×	0	.6	.7
		38	42	47	33	79 F/1	5	74	41	33	3	10	30	40	24	19	----	----

Line:
9. Added upper rim strip.
14. Hole tempering—interior surface.
21. Probably had loop handle.
22. Hole temper—interior.
32. Lip rolled outward slightly.
50. Cord-wrapped paddle to lip.
52. Probably had loop handle.
57. Added outer rim strip.
66. Added outer rim strip.
71. Added outer rim strip.
72. Added outer rim strip.
73. Added outer rim strip.
74. Added outer rim strip.
76. Site 11—jar shape A; upper rim hole tempered.
77. Upper rim angled horizontally outward.
78. Upper rim angled horizontally outward.
79. Upper rim angled horizontally outward.

CHART XXXII.—SITE NO. 5—LOOP HANDLES

[Catalog Nos. 6546–6549]

	Catalog no.	Temper		Hardness			Texture	Handle dimensions	
		H	S	2	2–2.5	2.5	MF	Lat.	Front to back
								cm	*cm*
1	6549	--------	×	×	--------	--------	×	1.3	1.4
2	6549	--------	×	×	--------	--------	×	2.0	1.6
3	6549	×	--------	×	--------	--------	×	1.5	1.0
4	6547	×	--------	×	--------	--------	×	1.8	1.6
5	6549	×	--------	×	--------	--------	×	1.7	1.6
6	6547	×	--------	×	--------	--------	×	2.0	1.7
7	6549	×	--------	×	--------	--------	×	2.0	1.8
8	6549	--------	×	--------	×	--------	×	2.0	1.8
9	6548	×	--------	×	--------	--------	×	2.0	1.6
10	6549	--------	×	--------	×	--------	×	2.3	1.3
11	6549	×	--------	×	--------	--------	×	1.8	1.8
12	6549	--------	×	--------	×	--------	×	2.0	1.6
13	6549	×	--------	×	--------	--------	×	2.0	1.7
14	6547	×	--------	×	--------	--------	×	2.0	1.8
15	6548	×	--------	×	--------	--------	×	1.8	1.7
16	6549	×	--------	×	--------	--------	×	2.1	1.7
17	6549	×	--------	×	--------	--------	×	2.2	1.9
18	6548	--------	×	×	--------	--------	×	2.2	1.5
19	6549	--------	×	--------	×	--------	×	2.5	1.8
20	6548	--------	×	--------	×	--------	×	2.0	1.7
21	6548	×	--------	×	--------	--------	×	2.2	1.8
22	6549	--------	×	×	--------	--------	×	2.0	1.7
23	6549	×	--------	×	--------	--------	×	2.0	1.6
24	6549	×	--------	×	--------	--------	×	1.7	1.5
25	6549	×	--------	×	--------	--------	×	2.3	2.3
26	6546	--------	×	×	--------	--------	×	1.4	1.4
27	6546	--------	×	--------	×	--------	×	2.3	1.6
28	6549	×	--------	×	--------	--------	×	1.8	1.8
29	6546	--------	×	--------	--------	×	×	2.0	1.6
30	6546	×	--------	×	--------	--------	×	2.1	2.0
31	6549	×	--------	×	--------	--------	×	2.0	2.0
32	6546	×	--------	×	--------	--------	×	1.9	2.3
33	6546	×	--------	×	--------	--------	×	1.6	1.6
34	6547	--------	×	--------	×	--------	×	2.5	1.5
35	6547	×	--------	×	--------	--------	×	2.2	1.8
36	6546	--------	×	×	--------	--------	×	1.3	1.1
37	6549	×	--------	×	--------	--------	×	2.2	1.7
		23	14	29	7	1	37	--------	--------

Line:
1. Projects above lip—bifurcated.
2. Projects above lip—single large broad knob.
3. Projects above lip—pointed knob.
4. Projects above lip—single large broad knob.
5. Projects above lip.
6. Projects above lip—large broad knob—slightly depressed on top.
7. Projects above lip.
8. Projects above lip.
9. Projects above lip.
10. Base of handle riveted into shoulder wall.
12. Base of handle riveted.
13. Base of handle riveted.
15. Attached to lip.
18. Projects above lip.
24. Attached to lip.

CHART XXXIII.—SITE NO. 9—JAR RIMS—NOT HOLE TEMPERED

[Catalog Nos. 6483-6536]

	Catalog no.	Hardness				Texture			Surface finish			Shape of rim			Shape of lip			Thickness		Color	
		2	2-2.5	2.5	3	F	MF	M	CW P	CW P & S	S	St.	Sl. Fl.	Fl.	N & R	R	F & R	Lip	Rim	SBI	SBE
																		cm	*cm*		
1.	6491		×				×			×				×			×	0.9	0.6	0	0
2.	6506		×				×				×		×			×		.9	.7	×	0
3.	6517		×				×				×		×				×	.8	.6	×	×
4.	6506		×				×				×	×					×	.6	.6	×	×
5.	6506	×					×				×		×				×	.4	.6	0	0
6.	6489		×				×				×		×				×	1.0	.7	0	0
7.	6506		×				×				×		×			×		.65	.7	0	×
8.	6492		×				×				×	×				×		.6	.8	×	×
9.	6534		×				×				×		×				×	.8	.8	0	×
10.	6534		×				×				×		×				×	.5	.65	×	×
11.	6532		×				×			×		×					×	.45	.6	0	×
12.	6532		×				×				×	×					×	.6	.7	0	0
13.	6517		×				×				×			×			×	1.0	.7	×	0
14.	6536		×				×				×	×				×		.8	.7	×	0
15.	6509		×				×			×		×				×		.8	.7	×	0
16.	6500		×				×				×		×				×	.6	.6	×	×
17.	6491	×				×					×		×				×	.7	.7	0	0
18.	6532		×				×				×		×		×			.4	.6	0	×
19.	6509	×					×				×	×				×		.5	.7	0	×
20.	6532		×				×				×	×					×	.65	.65	×	×
21.	6516	×					×				×	×					×	.7	.7	×	×
22.	6517		×				×				×		×				×	1.1	.7	×	0
23.	6522		×				×				×	×				×		.6	.7	0	×
24.	6531	×				×				×		×				×		.6	1.0	0	0
25.	6534		×				×				×		×			×		.6	.8	0	0
26.	6529		×				×				×	×				×		1.2	1.9	×	0
27.	6536	×					×				×		×				×	.7	.7	×	×
28.	6532		×				×				×	×				×		.6	.55	×	×
29.	6506		×				×				×	×				×		.6	.55	×	0
30.	6532			×			×				×	×				×		.5	.55	0	×
31.	6509			×			×				×	×				×		.6	.4	×	×
32.	6488			×			×				×		×				×	.6	.7	0	0
33.	6500		×				×				×	×				×		.4	.3	×	×
34.	6491		×				×				×		×				×	.9	.7	0	×
35.	6509		×				×				×	×					×	.7	.6	×	0
36.	6506	×				×					×	×				×		.5	.7	×	0
37.	6506		×				×				×	×					×	.7	.7	×	×
38.	6486	×					×				×		×				×	.8	.7	0	0

CHART XXXIII.—SITE NO. 9—JAR RIMS—NOT HOLE TEMPERED—Continued

[Catalog Nos. 6483-6536]

	Catalog no.	Hardness				Texture			Surface finish			Shape of rim			Shape of lip			Thickness		Color	
		2	2-2.5	2.5	3	F	MF	M	CW P	CW P & S	S	St.	Sl. Fl.	Fl.	N & R	R	F & R	Lip	Rim	SBI	SBE
																		cm	*cm*		
39	6522		×				×				×	×				×		0.7	0.7	0	0
40	6536			×			×				×	×					×	.7	.6	×	×
41	6536		×				×				×	×					×	.8	.8	0	0
42	6536		×				×				×	×				×		.7	.6	0	0
43	6517	×					×				×		×				×	.7	.9	0	0
44	6530		×				×				×		×		×			.5	.9	0	0
45	6530	×					×				×	×				×		.6	.8	0	0
46	6531		×				×				×	×				×		.6	.9	0	0
47	6525		×				×			×		×				×		.5	.7	0	0
48	6535		×				×			×		×				×		.5	.7	0	0
49	6533		×				×				×		×				×	.9	.5	0	×
50	6522		×				×				×			×		×		.5	.5	×	×
51	6509	×					×				×	×					×	.6	.55	×	×
52	6532		×				×				×	×					×	1.0	.5	0	×
53	6509		×				×				×	×				×		.5	.5	0	×
54	6532		×				×				×		×			×		.5	.7	×	×
55	6532		×				×				×		×				×	.5	.6	×	×
56	6522		×				×				×	×				×		.6	.6	0	0
57	6531		×				×				×	×					×	.6	1.0	0	0
58	6533			×			×				×	×				×		.8	.6	×	×
59	6532			×			×				×	×			×			.4	.6	0	0
60	6532			×			×				×	×					×	.6	.65	0	×
61	6532		×				×				×	×					×	.7	.5	0	×
62	6536		×				×				×	×				×		.6	.6	0	0
63	6522	×					×				×		×			×		.6	.7	×	×
64	6522		×				×				×	×					×	.5	.4	×	×
65	6518		×				×		×			×					×	.7	.6	0	0
66	6517		×				×				×		×				×	.65	.5	×	×
67	6532		×			×					×	×				×		.6	.6	0	0
68	6532		×				×				×	×					×	.6	.5	×	×
69	6522		×				×				×	×				×		1.0	.6	0	0
70	6536			×			×			×		×					×	1.0	.5	0	×
71	6532		×				×				×	×					×	.7	.6	0	0
72	6532		×				×				×		×				×	.7	.7	×	×
73	6492		×				×				×		×				×	.7	.6	0	×
74	6532		×				×				×		×				×	.7	.5	0	0
75	6532		×				×				×		×				×	.9	.4	0	×
76	6531		×				×				×		×			×		.5	.65	0	0

77	6536	------	X	------	------	------	X	------	------	------	X	X	------	------	------	X	------	.5	.4	0	0
78	6536	------	------	X	------	------	X	------	------	------	X	------	X	------	------	------	X	.8	.6	0	X
79	6536	------	X	------	------	------	X	------	------	------	X	------	X	------	------	------	X	.8	.45	0	0
80	6536	------	X	------	------	------	X	------	------	------	X	X	------	------	------	------	X	.7	.6	X	X
81	6536	------	------	X	------	------	X	------	------	------	X	X	------	------	------	X	------	.65	.5	X	X
82	6532	------	X	------	------	------	X	------	------	------	X	X	------	------	------	------	X	.6	.5	0	0
83	6509	------	------	X	------	------	X	------	------	X	------	X	------	------	------	------	X	.5	.5	0	X
84	6515	------	X	------	------	------	X	------	------	------	X	------	X	------	------	------	X	.5	.6	0	0
85	6490	------	X	------	------	------	X	------	------	------	X	X	------	------	------	------	X	.7	.5	0	X
86	6535	------	X	------	------	X	------	------	------	------	X	X	------	------	------	X	------	.5	.5	0	X
87	6530	------	X	------	------	------	X	------	------	X	------	X	------	------	------	X	------	.4	.5	X	X
88	6531	------	X	------	------	------	X	------	------	------	X	X	------	------	X	------	------	.3	.5	X	X
89	6489	------	X	------	------	------	X	------	------	------	X	X	------	------	------	------	X	.5	1.2	X	X
90	6519	------	X	------	------	------	------	X	------	------	X	X	------	------	------	X	------	1.0	1.3	0	0
91	6489	------	------	X	------	------	X	------	------	------	X	X	------	------	------	------	X	.7	1.2	0	0
92	6529	------	X	------	------	------	X	------	------	------	X	X	------	------	------	X	------	1.0	1.2	0	0
93	6530	------	X	------	------	------	X	------	X	------	------	X	------	------	X	------	------	.5	.9	0	0
94	6530	------	X	------	------	------	X	------	X	------	------	------	X	------	------	(?)	------	(?)	.9	0	0
95	6529	------	X	------	------	------	X	------	X	------	------	X	------	------	------	X	------	.6	.8	X	0
96	6530	------	X	------	------	------	X	------	X	------	------	X	------	------	------	X	------	.65	.9	0	0
97	6530	------	X	------	------	------	X	------	X	------	------	------	------	X	X	------	------	.4	.7	0	0
98	6529	------	------	X	------	------	X	------	------	X	------	X	------	------	------	------	X	1.5	.7	X	0
99	6530	------	------	X	------	------	X	------	------	------	X	------	(?)	------	------	X	------	.5	1.0	0	0
100	6531	------	------	------	X	------	X	------	X	------	------	------	(?)	------	------	X	------	.5	1.0	0	0
		12	73	14	1	5	94	1	7	10	83	62	32	4	6	42	51	------	------	39	48

Line:
1. A few unsmoothed cord impressions—lip thickened.
2. Lip slopes outward—smoothing striations perpendicular.
5. Probably had loop handle.
6. Upper quarter of rim bent outward—lip thickened.
10. Shoulder thickness 1 cm.
13. Lip thickened.
14. Lip slightly everted—some hole temper.
16. Lip slopes outward.
17. Lip projects outward slightly.
23. Slightly hole tempered.
25. Upper rim thickened.
26. Upper rim and lip thickened.
28. Slightly hole tempered.
34. Lip slopes outward.
38. Lip slopes inward slightly.
40. Rim very short.
44. Rim very short.
46. Rim very short.
47. Probably small vessel.
48. Probably small vessel.
49. Lip slopes inward.
50. Short rim.
51. Slightly hole tempered—lip slopes outward slightly.
52. Lip built outward.
58. Slightly thickened upper rim.
61. Lip slopes outward.
66. Short rim.
67. Short rim.
68. Slightly thickened upper rim.
76. Bottle neck (?).
78. Lip projects outward.
79. Lip projects outward.
83. Small jar—short rim.
87. Upper rim bent outward horizontally 1.2 cm—small jar.
88. Upper rim bent outward horizontally 0.8 cm—small jar.
89. Shoulder 0.5 cm body tooled with cord-wrapped paddle.
90. Shoulder 1.4 cm body tooled with cord-wrapped paddle.
92. Shoulder 1.2 cm body tooled with cord-wrapped paddle.
93. Upper rim smoothed.
94. Upper rim smoothed.
95. Upper rim smoothed.
96. Upper rim smoothed.
97. Upper rim smoothed—upper rim angles outward 45°.
98. Upper rim smoothed—lip projects outward.
99. Upper rim smoothed—bent outward 2.1 cm—site 11, type A.
100. Upper rim smoothed—bent outward 2.1 cm—site 11, type A.

Chart XXXIV.—Site No. 9—Jar Rims—Hole Tempered

[Catalog Nos. 6483–6536]

	Catalog no.	Hardness		Texture		Surface finish			Shape of rim			Shape of lip			Thickness		Color	
		2	2–2.5	F	MF	CWP	CW P&S	S	St.	Sl. Fl.	Fl.	NR	R	FR	Lip	Rim	SBI	SBE
															cm	*cm*		
1	6509	X			X			X		X				X	1.0	0.7	0	0
2	6521	X			X			X	X					X	.9	.7	0	0
3	6532	X			X			X			X		X		.8	1.0	0	0
4	6535	X			X			X	X					X	1.0	.7	0	0
5	6532	X			X			X		X				X	.8	.7	0	X
6	6515	X			X			X		X				X	.9	.8	X	X
7	6504	X			X			X	X					X	.7	.4	0	X
8	6497	X			X			X	X					X	.8	.7	X	X
9	6507		X		X			X	X					X	.5	.6	0	0
10	6514	X			X			X		X			X		.4	.6	X	X
11	6525	X			X		X		X				X		.5	.65	0	0
12	6536	X			X			X		X			X		.5	.5	0	X
13	6532	X			X			X	X					X	.6	.5	X	X
14	6514	X			X			X	X					X	.8	.65	0	0
15	6522	X			X			X	X					X	.8	.8	X	X
16	6491	X			X			X	X					X	.7	.5	0	X
17	6501	X			X			X		X				X	.5	.6	0	0
18	6514	X			X			X	X					X	.8	.6	0	X
19	6497	X			X			X		X				X	.9	.5	X	X
20	6525	X			X			X		X				X	.5	.6	0	0
21	6536	X			X			X	X					X	.7	.6	X	X
22	6497	X			X			X	X				X		.7	.5	X	0
23	6496		X		X			X	X					X	.5	.6	X	X
24	6501	X			X			X	X					X	.6	.7	0	0
25	6446	X			X			X	X					X	.8	.7	0	0
26	6495	X			X			X	X				X		.7	.8	0	0
27	6495	X			X			X		X				X	.7	.6	0	X
28	6533	X			X			X	X					X	.8	.8	X	0
29	6522	X			X			X		X				X	.7	.7	0	0
30	6532	X		X				X	X					X	.6	.6	0	X
31	6532	X			X			X	X					X	1.0	.6	X	X
32	6514	X			X			X	X					X	.6	.7	0	0
33	6532		X		X			X	X				X		.6	.7	0	0
34	6519		X		X			X	X					X	.7	.7	0	0
35	6495	X			X			X	X					X	.7	.7	X	X
36	6595		X		X			X	X					X	.7	.6	X	X
37	6515	X			X			X	X					X	.7	.6	0	0

38	6536	X			X			X	X					X	.6	.7	0	X
39	6514	X			X			X	X					X	.6	.7	X	0
40	6485	X			X			X	X					X	.65	.8	0	0
41	6509	X			X			X	X					X	.7	.4	X	X
42	6506	X			X			X	X					X	.7	.6	0	0
43	6497	X			X			X	X					X	1.2	1.0	0	0
44	6509	X			X			X	X					X	.7	.6	X	X
45	6484	X			X			X	X			X			.4	.6	0	0
46	6509		X		X			X	X				X		.5	.5	0	X
47	6509	X			X			X	X					X	1.0	.5	0	0
48	6509	X			X			X	X					X	.9	.5	0	X
49	6508	X			X			X		X			X		.8	.8	0	X
50	6450	X			X			X	X					X	.8	.8	0	0
51	6509	X			X			X	X				X		.6	.8	0	0
52	6508	X			X			X	X					X	.7	.6	0	X
53	6512	X			X			X		X			X		.4	.5	X	X
54	6533	X			X			X		X			X		.5	.6	0	0
55	6531	X			X			X	X				X		.5	.6	0	X
56	6532	X			X			X			X		X		.7	.8	0	X
57	6484	X			X			X	X					X	.7	.7	X	0
58	6509	X			X			X	X					X	.6	.9	X	0
59	6532	X			X			X	X				X		.8	.5	0	0
60	6532	X			X			X		X				X	.6	.6	X	X
61	6532	X			X			X	X					X	.6	.7	0	0
62	6535	X			X			X	X					X	1.0	.6	0	0
63	6535	X			X	X			X					X	.8	.5	0	0
64	6495	X			X			X	X					X	.7	.6	0	X
65	6497	X			X			X	X					X	.6	.6	X	X
66	6495	X			X			X		X				X	.8	.5	0	0
67	6532	X			X			X	X					X	.5	.5	0	0
68	6491	X			X			X	X				X		.6	.65	0	X
69	6495	X		X				X	X				X		.6	.5	0	0
70	6532	X			X			X	X				X		.5	.8	0	0
71	6533	X			X			X	X					X	.9	.6	X	X
72	6532	X			X			X	X					X	.6	.6	X	X
73	6524	X			X			X	X					X	.7	.6	0	0
74	6495	X			X			X	X					X	.6	.7	0	0
75	6509	X			X			X	X				X		1.0	.8	0	3
76	6506	X			X			X		X			X		.5	.6	0	0
77	6492	X			X			X	X					X	.8	.6	0	0
78	6521	X			X			X		X				X	.7	.6	0	0
79	6510	X			X			X		X				X	.5	.5	0	0
80	6522	X			X			X	X			X			.5	.8	0	X
81	6532	X			X			X	X					X	.8	.7	0	X
82	6496	X			X			X	X					X	.6	.5	0	X
83	6496	X			X			X	X				X		.5	.7	0	0
84	6497	X			X		X		X				X		.6	.7	0	0
85	6500	X			X			X		X				X	.6	.6	0	0
86	6536	X			X			X	X					X	.6	.5	X	X
87	6497	X			X			X	X				X		.65	.7	0	0
88	6497	X			X			X	X					X	.7	.6	0	X

Chart XXXIV.—Site No. 9—Jar Rims—Hole Tempered—Continued

	Catalog no.	Hardness		Texture		Surface finish			Shape of rim			Shape of lip			Thickness		Color	
		2	2–2.5	F	MF	CWP	CW P&S	S	St.	Sl. Fl.	Fl.	NR	R	FR	Lip	Rim	SBI	SBE
															cm	*cm*		
89	6491	×	------	------	×	------	------	×	×	------	------	------	×	------	0.5	0.5	0	0
90	6532	×	------	------	×	------	------	×	------	×	------	------	------	×	.6	.7	0	0
91	6535	×	------	------	×	------	------	×	×	------	------	------	×	------	.6	.6	0	×
92	6514	×	------	------	×	------	------	×	×	------	------	------	------	×	.7	.6	×	0
93	6532	×	------	------	×	------	------	×	------	×	------	------	------	×	.6	.6	×	×
94	6532	×	------	------	×	------	------	×	×	------	------	------	×	------	.5	.5	×	×
95	6509	×	------	------	×	------	------	×	×	------	------	------	×	------	.7	.8	0	0
96	6509	×	------	------	×	------	------	×	×	------	------	------	×	------	.8	.8	×	×
97	6509	×	------	------	×	------	------	×	------	×	------	------	×	------	.6	.7	0	0
98	6518	------	×	------	×	------	------	×	×	------	------	------	×	------	.6	.5	0	×
99	6499	------	×	------	×	------	------	×	×	------	------	------	------	×	.6	.6	0	0
100	6536	------	×	------	×	------	------	×	×	------	------	------	------	×	.8	.5	×	×
		91	9	2	98	1	2	97	76	22	2	2	30	68	------	------	29	45

Line:
1. Lip projects outward.
2. Lip area thickened.
3. Had loop handle.
16. Rim short—long shoulder—shoulder 0.6 cm thick.
19. Lip projects exteriorly.
27. Lip slants outward.
28. Lip slants outward.
29. Lip slants outward.
33. Not hole tempered.
43. An unusually thick sherd—lip slopes inward slightly.
47. Smallest handle at site.
48. Lip slants inward.
58. Lip slopes inward.
60. Lip rolled outward slightly.
71. Lip projects outward slightly.
74. Lip slopes outward slightly.
83. Two narrow deep-incised right-to-left slanting lines.
90. Lip slopes outward.
92. Upper section of rim slightly thickened—bent outward.
95. Rim flares outward at 45° angle—shoulder 0.5 cm.
98. Not hole tempered.
99. Not hole tempered.
100. Not hole tempered.

CHART XXXV.—SITE NO. 9—HANDLES

[Catalog Nos. 6483-6536]

	Catalog no.	Hardness			Temper		Texture		Shape of rim		Shape of lip			Color		Thickness		Handle				
																		Attached		Dimensions		
		2	2-2.5	2.5	Hole	Not hole	F	MF	St.	Sl. Fl.	N & R	R	F & R	SBI	SBE	L	R	To lip	Above lip	Lateral	Front to back	L
																				cm	*cm*	
1	6493	------	X	------	------	X	------	X	------	------	------	------	X	------	X	1.1	------	------	X	2.0	1.5	------
2	6536	------	X	------	------	X	------	X	------	------	------	X	------	------	0	.7	------	------	X	1.8	1.5	------
3	6513	------	X	------	X	------	------	X	------	------	------	X	------	------	X	.8	------	------	X	------	------	------
4	6509	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	1.5	1.5	------
5	6494	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	2.6	1.7	------
6	6507	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	1.5	1.5	------
7	6496	X	------	------	X	------	------	X	------	------	------	------	------	------	0	------	------	------	X	1.8	1.5	------
8	6534	------	X	------	------	X	------	X	------	------	------	X	------	------	X	.5	------	------	X	2.0	1.6	------
9	6522	------	X	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	2.6	1.4	------
10	6498	X	------	------	X	------	X	------	------	------	------	X	------	------	0	------	------	------	X	1.5	1.4	------
11	6490	------	X	------	------	X	------	X	------	------	------	X	------	------	0	------	------	------	X	2.0	1.7	------
12	6521	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	1.9	1.5	------
13	6536	------	X	------	------	X	------	X	------	X	------	X	------	------	X	.6	------	------	X	1.6	1.6	------
14	6533	------	X	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	------	------	------
15	6490	X	------	------	X	------	------	X	X	------	------	------	X	------	X	------	------	------	X	------	------	------
16	6518	X	------	------	------	X	------	X	------	------	------	------	------	------	0	------	------	------	X	2.0	1.8	------
17	6526	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	2.1	2.0	------
18	6527	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	3.1	1.6	------
19	6496	X	------	------	X	------	------	X	------	------	------	------	------	------	0	------	------	------	X	1.6	1.4	------
20	6491	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	2.2	------	------
21	6536	------	X	------	------	X	------	X	------	------	------	------	------	------	X	------	------	------	X	2.0	2.0	13.3
22	6524	------	X	------	------	X	------	X	------	------	------	X	------	------	0	------	------	------	X	1.9	1.5	------
23	6491	X	------	------	X	------	------	X	------	X	------	------	------	------	0	------	------	------	X	2.0	1.7	8.8
24	6515	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	------	2.3	1.5	------
25	6499	X	------	------	X	------	------	X	------	------	------	------	------	------	0	------	------	------	X	1.9	1.5	------
26	6521	------	X	------	------	X	------	X	X	------	------	X	------	X	0	.7	.5	------	X	2.3	1.8	------
27	6514	------	X	------	------	X	------	X	------	X	------	X	------	X	X	.5	.5	------	X	2.0	1.4	------
28	6483	X	------	------	X	------	------	X	------	------	------	------	------	------	0	------	.6	------	X	2.1	1.6	------
29	6504	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	1.6	1.5	------
30	6509	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	------	------	------	------
31	6483	------	X	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	1.9	1.8	------
32	6495	X	------	------	X	------	------	X	X	------	------	------	------	------	X	------	.6	------	X	2.0	1.6	------
33	6491	X	------	------	X	------	------	X	------	------	------	------	------	------	X	------	------	------	X	2.5	1.5	------
34	6532	------	X	------	------	X	------	X	------	------	------	------	------	------	0	------	------	------	------	2.2	1.6	------
35	6536	X	------	------	------	X	------	X	------	X	------	------	X	0	X	.7	.7	X	------	1.9	1.5	7.2

CHART XXXV.—SITE NO. 9—HANDLES—Continued

	Catalog no.	Hardness			Temper		Texutre		Shape of rim		Shape of lip			Color		Thickness		Handle				
																		Attached		Dimensions		
		2	2-2.5	2.5	Hole	Not hole	F	MF	St.	Sl. Fl.	N & R	R	F & R	SBI	SBE	L	R	To lip	Above lip	Lateral	Front to back	L
																				cm	*cm*	
36	6536		×			×		×		×			×	0	×	.8	.7	×		1.9	1.5	
37	6525	×			×			×	×		×			×	×	.3	.5	×		1.6	1.2	4.9
38	6522	×				×		×	×		×			×	×	.4	.7	×		1.7	1.6	
39	6536	×			×			×						×	×			×		1.6	1.5	
40	6509	×			×			×							×			×		2.1	1.4	
41	6514	×			×			×						×	×		.5	×		1.6	1.5	
42	6492		×			×		×							0			×		1.8	1.5	
43	6492	×			×			×							0			×		1.5	1.5	
44	6532		×			×		×	×			×		0	0	.6	.5			1.6	1.0	
45	6526	×			×			×	×				×	0	0	.8	.7	×		2.0	1.9	8.3
46	6529		×			×		×		×				0	0			×		1.5	1.3	5.0
47	6522	×			×			×	×					0	0			×		1.1	.7	3.0
48	6517		×			×		×	×				×	×	×	.8	.5	×		1.7	1.7	
49	6497		×			×		×						×	×			×		1.6	1.6	
50	6495	×			×			×							0			×		1.6	1.5	
51	6522	×			×			×						0	0			×		2.0	1.5	
52	6535	×			×			×							0			×		1.9	1.2	
53	6509	×			×			×							×		.8	×		2.2		
54	6521		×			×		×	×				×	0	0	.7	.6	×		2.5	1.4	
55	6534		×			×		×		×			×	0	×	.6	.6	×		2.3	1.0	
56	6526	×			×			×						×	×			×		2.0	1.4	
57	6497		×			×		×							0			×		2.8	1.1	
58	6509	×			×			×	×					×	×		.8	×		2.5	1.2	
59	6511	×			×			×						×	×			×		2.4	1.2	
60	6532		×			×		×						×	×			×		1.6	1.6	
61	6510	×			×			×							×			×		2.1	1.7	
62	6491	×			×			×		×		×		×	×	.7	.7	×		2.1	1.7	6.9
63	6533	×			×			×	×				×	0	0	.7	.7	×		3.1	1.4	
64	6495	×			×			×	×				×	×	0	.8	.7	×				
65	6533		×			×		×	×				×	0	×	.5	.6	×		2.0	1.2	
66	6495	×			×			×		×				×	×		.7	×		2.0	2.1	
67	6526	×			×			×	×		×			0	0	.3		×		2.7	1.9	5.8
68	6491	×			×			×							×			×		2.3	1.8	
69	6490		×			×		×							×			×		1.9	1.3	5.5
70	6533	×			×			×							0				×			
71	6486	×			×			×							0			×		2.6	1.6	8.5
72	6509		×			×		×							0			×		1.7	1.5	

73	6527	------	X	------	X	------	------	X	------	------	------	------	------	------	X	------	------	X	------	1.9	1.6	------
74	6522	------	X	------	X	------	------	X	------	------	------	------	------	------	X	------	------	X	------	2.2	1.9	------
75	6532	X	------	------	------	X	------	X	------	------	------	------	------	------	0	------	------	X	------	2.1	1.8	------
76	6533	------	------	X	------	X	------	X	------	------	------	------	------	------	X	------	------	X	------	1.9	1.7	------
77	6532	------	X	------	------	X	------	X	------	------	------	------	------	------	0	------	------	X	------	2.0	1.8	------
78	6532	------	X	------	------	X	------	X	------	------	------	------	------	------	X	------	------	X	------	------	------	------
79	6510	------	X	------	X	------	------	X	X	------	------	------	------	------	X	------	------	X	------	2.1	1.5	6.5
80	6536	X	------	------	------	X	------	X	------	------	------	------	------	------	0	------	------	X	------	2.5	1.7	------
81	6513	------	X	------	X	------	------	X	------	------	------	------	------	------	X	------	------	X	------	1.9	1.3	------
82	6532	------	X	------	------	X	------	X	------	------	------	------	------	------	0	------	------	------	------	2.0	1.8	------
83	6499	------	X	------	------	X	------	X	X	------	------	------	X	0	0	.5	.6	X	------	------	------	------
84	6536	------	X	------	------	X	------	X	------	X	------	------	X	0	X	.65	.6	X	------	------	------	------
85	6529	------	X	------	------	X	------	X	X	------	------	X	------	0	0	.8	.8	------	------	------	------	------
86	6529	------	X	------	------	X	------	X	X	------	X	------	------	X	0	.2	.6	------	------	------	------	------
87	6489	------	------	X	------	X	------	X	X	------	------	------	X	0	0	.45	.65	------	BL	4.3	------	1.7
88	6489	------	X	------	------	X	------	X	X	------	------	X	------	X	0	.7	------	------	BL	------	------	------
89	6489	------	X	------	------	X	------	X	X	------	------	------	X	0	0	.6	.8	------	BL	------	------	------
90	6497	X	------	------	X	------	------	X	X	------	------	------	X	X	X	.6	.3	------	BL	1.2	------	------
91	6508	------	X	------	------	X	------	X	------	------	------	------	------	X	X	------	.7	------	BL	------	------	------
92	6513	X	------	------	X	------	------	X	------	------	------	------	------	0	0	------	------	------	BL	1.5	------	------
93	6529	------	X	------	------	X	------	X	X	------	X	------	------	X	0	.6	.8	------	BL	3.2	------	2.0
94	6529	------	X	------	------	X	------	X	X	------	X	------	------	0	0	.5	.9	------	BL	6.5	------	1.9
95	6524	------	X	------	------	X	------	X	------	------	------	------	X	0	0	.7	------	X	------	2.7	------	------
96	6529	------	X	------	------	X	------	X	------	------	------	X	------	0	0	.6	.7	------	------	------	------	------
97	6509	X	------	------	------	X	------	X	X	------	------	------	X	0	0	.6	.7	------	------	2.9	------	4.0
98	6489	------	X	------	------	X	------	X	------	------	------	------	------	------	------	------	------	X	------	------	------	------
99	6530	------	X	------	------	X	------	X	------	------	------	------	------	------	------	------	------	------	------	5.2	------	1.0
100	6536	------	X	------	------	X	------	X	------	------	------	------	------	------	------	------	------	------	------	3.8	------	------
		50	48	2	52	48	1	99	26	10	6	14	18	20	52	------	------	49	32	------	------	------

Line:
1. Plain button above rim, 2.6 cm wide.
2. Plain button above rim, 1.9 cm wide.
3. Plain button above rim, 2.0 cm wide.
4. Plain button above rim, 1.7 cm wide.
6. Plain button above rim, 1.4 cm wide.
7. Pointed knob.
8. Raised section of rim, above handle.
9. Raised section of rim, above handle.
10. Raised section of rim, small knob.
11. Raised section of rim.
12. Raised section of rim, rounded knob.
13. Pointed knob.
14. Broad knob.
15. Broad knob.
16. High, broad knob—outer surface centrally depressed.
17. High, broad knob.
18. Broad knob handle—two horizontal nodes on handle.
19. Knob centrally depressed—two knobs on handle.
20. Lip knobs, two on handle just below it.
21. Very large and deep central depression in high knob.
22. Slight knob—central depression.
23. Two knobs at top separated by depression.
24. Two knobs at top separated by depression.
25. Two knobs at top separated by depression.
26. Large broad knob—centrally depressed.
27. Two knobs on top of handle.
28. Two knobs at top, separated by depression.
29. Two knobs at top, separated by depression.
30. May be bowl, effigy animal head.
31. Two knobs on top, separated by depression.
32. Two knobs on top, separated by depression.
33. Two large knobs, "ears" 1.6 cm wide.
34. Central depression on handle—two knobs.
35. Rim slightly raised at union with handle.
36. Rim slightly raised at union with handle.
37. Rim slightly raised at union with handle.
44. Handle attached 1.5 cm below lip.
47. Smallest handle at site.
49. Rim slightly raised at union with handle.
66. Raised above lip.
70. Broad knob.
82. Squared sides.
85. Rim strip nodes: H. 1.9 cm; W. 3.4 cm—cord-wrapped paddle finish.
86. Rim strip nodes: H. 1.7 cm; W. 3.7 cm.
87. Rim lug—may be a bowl.
88. Rim lug—may be a bowl.
89. Rim lug—may be a bowl.
90. Round rim node.
91. Small rim lug.
92. Round rim node.
93. Rim lug—C. W. P. surface finish.
94. Rim lug.
95. Rim lip lug.
96. Upper rim angles outward 35°—slightly pointed.
97. Two perpendicular parallel rim lugs.
98. Large strap handle—resembles Fox Farm.
99. Rim lug.
100. Rim lug.

CHART XXXVI.—SITE NO. 9—SALT PANS

[Catalog Nos. 6483–6536]

	Catalog no.	Hardness		Temper		Texture		Shape of lip		Color		Type of weave		Size		Thickness	
		2	2–2.5	H	Not H	MF	M	R	F&R	SBI	SBE	Plain twining	Twilled twining	Width of 5 warp	Width of 5 weft	Lip	Rim
														cm	cm	cm	cm
1.	6509	X	-----	X	-----	X	-----	-----	X	0	X	X	-----	-----	2.5	1.8	0.8
2.	6516	-----	X	X	-----	X	-----	X	-----	0	X	X	-----	-----	1.7	.8	.6
3.	6536	X	-----	X	-----	X	-----	-----	X	X	X	-----	-----	-----	-----	1.1	1.0
4.	6516	X	-----	X	-----	X	-----	-----	X	0	X	X	-----	-----	-----	1.1	.8
5.	6529	X	-----	-----	X	X	-----	-----	X	X	0	-----	X	-----	1.0	2.3	1.0
6.	6530	X	-----	-----	X	-----	X	X	-----	0	0	-----	X	-----	1.0	1.8	1.1
7.	6536	-----	X	-----	X	X	-----	X	-----	0	X	(1)	(1)	-----	-----	2.0	1.0
8.	6527	-----	X	-----	X	-----	X	-----	X	X	X	-----	-----	-----	-----	1.3	1.3
9.	6529	X	-----	-----	X	X	-----	X	-----	0	X	-----	-----	-----	-----	2.3	1.7
10.	6530	-----	X	-----	X	X	-----	-----	?	?	X	X	-----	-----	-----	-----	-----
11.	6532	X	-----	X	-----	X	-----	-----	?	0	0	-----	-----	-----	-----	1.5	1.1
12.	6532	-----	X	-----	X	X	-----	-----	X	0	X	X	-----	1.0	3.0	2.2	.6
13.	6499	X	-----	X	-----	X	-----	-----	X	0	X	X	-----	2.5	-----	1.4	1.0
14.	6515	X	-----	X	-----	X	-----	-----	X	0	0	X	-----	2.4	-----	1.2	.8
15.	6491	X	-----	X	-----	X	-----	X	-----	0	0	X	-----	-----	4.0	1.1	1.0
16.	6532	X	-----	X	-----	X	-----	-----	X	0	X	-----	-----	-----	-----	1.3	.7
17.	6496	X	-----	X	-----	X	-----	-----	X	0	0	X	-----	1.1	-----	1.3	1.0
18.	6514	X	-----	X	-----	X	-----	X	-----	X	X	X	-----	-----	3.2	1.3	.9
19.	6513	X	-----	X	-----	X	-----	X	-----	0	X	X	-----	-----	3.1	1.7	1.0
20.	6534	-----	X	-----	X	X	-----	-----	X	X	0	X	-----	-----	2.1	1.2	1.0
21.	6495	X	-----	X	-----	X	-----	-----	X	0	0	-----	-----	-----	-----	1.4	1.2
22.	6522	X	-----	X	-----	X	-----	-----	X	X	0	X	-----	1.1	-----	1.1	.6
23.	6533	-----	X	X	-----	X	-----	-----	X	0	X	-----	-----	-----	-----	1.7	.8
24.	6509	X	-----	X	-----	X	-----	X	-----	0	0	X	-----	-----	2.6	1.4	.8
25.	6527	X	-----	X	-----	X	-----	-----	X	X	X	-----	X	-----	2.5	1.5	.7
		18	7	17	8	23	2	8	15	7	15	14	3	-----	-----	-----	-----

[1] No textile.

Line:
5. Close weave.
6. Close weave.
7. Roughly smoothed.
13. Large thread—3.5 cm wide.
14. Large thread.
25. Zigzag design.

CHART XXXVII.—SITE NO. 9—BOWLS—INCURVING RIMS, SMOOTH SURFACE

[Catalog Nos. 6483–6536]

	Catalog no.	Hardness		Texture	Shape of lip			Color		Thickness	
		2	2–2.5	MF	R	F&R	N&R	SBI	SBE	Lip	Rim
										cm	*cm*
1.	6509	------	×	×	------	×	------	0	×	0.8	0.75
2.	6530	------	×	×	×	------	------	×	0	.6	1.0
3.	6529	------	×	×	×	------	------	×	×	.6	.5
4.	6532	------	×	×	------	×	------	0	0	.75	.8
5.	6509	×	------	×	×	------	------	0	×	.6	.7
6.	6512	------	×	×	------	×	------	0	×	.65	.55
7.	6509	------	×	×	×	------	------	0	0	.5	.6
8.	6486	------	×	×	------	×	------	0	0	.5	.6
9.	6533	------	×	×	------	×	------	×	×	.7	.65
10.	6489	------	×	×	------	------	×	×	×	.4	.6
		1	9	10	4	5	1	4	6	------	------

Line:
5. Hole temper.
6. Hole temper.
8. Hole temper.
9. Small rim, lip node.
10. Small upper rim ridge, transversely notched.

Chart XXXVIII.—Site No. 17—Jar Rims

[Catalog Nos. 6554–6556]

	Catalog no.	Hardness			Texture			Surface finish		Shape of rim			Shape of lip			Thickness		Shoulder	Color	
		2	2-2.5	2.5	F	MF	M	S	STR.	ST	Sl. Fl.	Fl.	N&R	R	F&R	Lip	Rim		SBI	SBE
																cm	*cm*	*cm*		
1	6556	X				X		X			X				X	0.6	0.8	0.9	0	0
2	6556	X				X		X		X					X	.5	.7	.7	X	0
3	6556		X			X		X		X				X		.7	.6	.9	X	X
4	6555	X				X		X			X		X			.3	.7	.5	0	X
5	6555	X					X	X		X				X		.6	.8	1.0	X	X
6	6554		X			X		X		X				X		.6	.6		0	X
7	6556	X				X		X		X				X		.5	.5	.3	X	X
8	6556		X			X		X			X				X	.8	.8	1.0	X	0
9	6556	X				X		X		X					X	.6	.7			
10	6556		X		X			X			X		X			.4	.7	.5	0	0
11	6556		X			X		X			X		X			.45	.65	.3	0	X
12	6556	X				X		X		X					X	.6	.5		0	0
13	6556		X			X		X			X		X			.2	.6		0	X
14	6555		X			X		X			X		X			.4	.5	.5	X	X
14	6556		X			X		X			X		X			.3	.4	.6	X	X
16	6554		X			X		X				X	X			.3	.4	.6	X	X
17	6556		X				X	X			X		X			.4	.55		X	X
18	6556		X				X	X		X			X			.2	.6		X	X
19	6556	X				X		X		X					X	.8	.6		0	X
20	6556		X			X		X		X					X	.5	.6		0	X
21	6554	X				X		X		X				X		.6	.7	1.0	X	0
22	6556	X				X		X		X				X		.5	.75		0	0
23	6555			X		X		X		X					X	.6	.4	.4	X	0
24	6556			X			X	X		X				X		.55	.6		X	X
25	6556			X		X		X		X			X			.4	.65		X	0
26	6556	X				X		X		X				X		.5	.8		0	X
27	6556	X				X		X		X				X		.6	.6		X	0
28	6556	X				X		X		X					X	.6	.7		X	0
29	6556		X			X		X		X			X				.8		X	0
30	6556			X		X		X		X			X			.25	.6		0	0
31	6556	X				X		X			X			X		.6	.5		X	X
32	6556		X			X		X			X		X			.4	.9		X	0
33	6556		X			X		X		X				X		.5	.5		X	X
34	6556	X				X		X		X				X		.5	.65		X	X
35	6556	X				X		X		X					X	.6	.65		0	X
36	6556		X				X		X	X			X			.5	.7		X	X
37	6556			X			X	X		X				X		.5	.7		X	X

38	6556	X	------	------	------	X	------	X	------	X	------	------	------	X	------	.8	.6	------	0	0
39	6555	X	------	------	------	X	------	X	------	X	------	------	X	------	------	.4	.6	------	X	X
40	6556	------	X	------	------	X	------	X	------	X	------	------	------	X	------	.6	.75	------	0	0
41	6556	------	X	------	------	X	------	X	------	------	X	------	X	------	------	.45	.75	------	X	X
42	6554	------	X	------	------	X	------	X	------	X	------	------	------	------	X	.65	.6	------	0	0
43	6556	X	------	------	------	X	------	X	------	X	------	------	------	X	------	.6	.7	------	0	0
44	6556	X	------	------	------	X	------	X	------	X	------	------	------	X	------	1.1	.7	------	X	0
45	6556	X	------	------	------	X	------	X	------	------	X	------	------	X	------	.6	.7	------	X	0
46	6556	------	X	------	------	X	------	------	X	X	------	------	X	------	------	.3	.6	------	X	X
47	6556	X	------	------	------	X	------	X	------	------	X	------	X	------	------	.3	.5	------	0	X
48	6556	X	------	------	------	X	------	X	------	X	------	------	------	------	X	.6	.6	------	X	0
49	6556	X	------	------	------	------	X	X	------	X	------	------	------	------	X	.7	.6	------	0	X
		24	20	5	1	41	7	47	2	34	14	1	18	18	13	------	------	------	29	27

Line:
4. Body tooled with cord-wrapped paddle.
9. Small lip, rim node 2.5 cm wide.
10. Slightly "sandy" feel.
13. Upper rim everted—temper is limestone.
17. Upper rim everted—temper is limestone.
18. Upper rim everted—temper is limestone.
24. Upper rim everted—temper is limestone.
25. Upper rim everted—temper is limestone.
29. Limestone temper.
30. Limestone temper. (?) Hole—upper rim everted.
31. Limestone temper. (?) Hole—upper rim everted.
32. Limestone temper. (?) Hole—upper rim everted.
33. Limestone temper. (?) Hole—upper rim everted.
34. Hole temper.
35. Hole temper.
36. Hole temper—limestone temper.
37. Lip slightly everted—limestone temper.
38. Hole temper—probably limestone—lip rolled outward.
39. Hole temper.
41. Hole temper—limestone temper.
42. Hole temper.
43. Hole temper—probably limestone.
44. Hole temper—unusually thickened lip.
45. Hole temper—probably limestone
46. Hole temper—probably limestone
47. Hole temper.
48. Hole temper—lip rolled outward.
49. Hole temper.

CHART XXXIX.—SITE NO. 17—SALT PANS

[Catalog Nos. 6554–6556]

	Catalog no.	Hardness		Temper		Texture		Shape of lip		Color		Weave	Size of weave		Thickness	
		2	2–2.5	H	Not H	M F	M	R	F & R	SBI	SBE	Plain twining	Width of 5 warp	Width of 5 weft	Lip	Rim
													cm	*cm*	*cm*	*cm*
1----------	6554	×	----	----	×	×	----	×	----	0	×	×	----	2.5	1.4	0.8
2----------	6556	×	----	----	×	×	----	----	×	0	0	×	----	2.8	2.8	.9
3----------	6555	×	----	×	----	×	----	----	×	0	×	×	1.9	6.0	1.8	.8
4----------	6554	----	×	----	×	×	----	×	----	×	0	×	----	----	1.2	.4
5----------	6555	×	----	----	×	×	----	×	----	0	0	×	----	----	1.2	1.0
6----------	6554	×	----	----	×	×	----	×	----	0	0	×	.9	----	1.1	.8
7----------	6555	----	×	----	×	×	----	----	×	×	×	×	----	----	1.6	1.0
8----------	6556	×	----	×	----	×	----	----	×	0	×	×	----	3.5	1.4	.9
9----------	6555	×	----	×	----	×	----	----	×	0	×	----	----	----	1.7	1.0
10----------	6554	----	×	----	×	×	----	×	----	0	0	----	----	----	1.0	1.0
11----------	6554	----	×	----	×	×	----	----	×	0	0	----	----	----	1.4	1.0
12----------	6556	----	×	----	×	×	----	×	----	0	×	×	2.4	----	1.4	1.0
13----------	6556	×	----	----	×	----	×	×	----	0	0	----	----	----	.5	1.0
14----------	6556	----	×	----	×	×	----	----	----	0	0	×	1.2	4.6	----	.75
		8	6	3	11	13	1	7	6	2	6	10	----	----	----	----

Line:
3. Heavy warp threads—weft set wide apart.
7. Heavy warp threads.
12. Heavy warp of two strands is 0.4 cm wide.
13. Lip narrowed—angled shoulder, rim incurving.
14. Warp threads 0.1 cm wide.

TREE RING DATING FOR SOUTHEASTERN MOUNDS

By Florence M. Hawley

Assistant Professor in Anthropology, University of New Mexico, and Consulting Dendrochronologist, Tennessee Valley Authority, 1934–35

Since 1927, when Dr. Andrew E. Douglass, of the University of Arizona, first published dates on prehistoric southwestern pueblos, archaeologists working in that area have been able to assign definite periods and years to their sites and to their chronologies. His material consisted principally of pine beams and of other wood specimens found in the ancient ruins of northern and central Arizona, of southern Utah and Colorado, and of northeastern New Mexico. Subsequently W. S. Stallings, working for the Laboratory of Anthropology at Santa Fe, worked out a master chart for the difficult Rio Grande area, and sites of that region took their definite places in historical sequence. Where wood was lacking or was of some variety unsuitable for dating by tree-ring analysis, cross finds of pottery between dated and undated ruins provided approximate dates for the latter. Charcoal debris from house fires dated pottery sequences taken from the strata of refuse mounds. Southwestern chronologies were on a sound basis.

With dating by tree-ring analysis a proven success in southwestern archaeology, the archaeologists of the Middle West and of the Southeast began to wonder whether wood from the Mound Builder ruins might not be used for dating the numerous proponents of that culture. In the spring of 1934 Dr. Fay-Cooper Cole, director of the Department of Anthropology of the University of Chicago, proposed that an investigation be made of the possibility of application of dendrochronology to the Mound Builder area.

With this investigation as the object, 6 weeks of field work was proposed for the summer. Dr. Carl Guthe, of the University of Michigan, chairman of the committee on State Archaeological Surveys, Division of Anthropology and Psychology, National Research Council, sent out a bulletin which announced the project to archaeologists and asked for aid in location of modern timber tracts and in preservation of wood specimens excavated from any mounds on which they might be working.

In answer to this proposal many workers offered their cooperation. Maj. William S. Webb, Head of the Department of Anthropology and Archaeology of the University of Kentucky and in charge of the archaeological excavations carried on for the Tennessee Valley Authority in the Norris Basin, wrote to suggest that the work be initiated in the area to be covered by the Norris Lake, as all the standing timber was being cut. This would permit the collection of as many specimens as might be desired from a number of different species of trees. Moreover, settlements in this district were known to have been earlier than in most other regions of the South and the Middle West, and the log cabins of the pioneers still stood, for the most part, inhabited. These cabins which stood below the level of the future lake were to be razed, and we were welcome to sections from the logs. As this program of land clearing offered an unusual opportunity for opening our program, we accepted the invitation and left for La Follette, Tenn. Ten days were spent in La Follette in the collection and examination of specimens. Instructions were given in preservation of the partially decayed wood being taken from the post holes and from the steps of ancient mound structures and grave coverings. Arrangements were made for the collection of several hundred specimens of modern woods, the work to be done by a field man in collaboration with Mr. Holley and his crews, who sent in reports of large trees being felled. Our remaining 4 weeks were spent collecting and studying oaks in an area in which the University of Chicago was interested in dating the mounds they excavated. Part-time work was carried on for the Tennessee Valley Authority during the rest of the year, and the summer of 1935 was spent with the Authority in Knoxville.

The immediate result of the initial work on eastern Tennessee trees has been a partial answer to several problems. Our principal question regarding tree-ring work in the Mound Builder area was in regard to the humidity of the area. In the arid Southwest, pines, piñon, and Douglas fir carry records sensitive to variations in annual precipitations. The curve of their growth records gives a high correlation with precipitation records for the same area. Within an area the records of all normal specimens of a species cross date, or agree with each other in their pattern of successive large and small rings. While the actual width of 1 year's growth will vary from tree to tree, dependent upon the drainage and soil conditions, the relative ring widths in the pattern of one tree have been found to agree with those of the patterns of other trees through the same period. The patterns of ring growth have been tested at various heights upon a tree and at various radii on the cross section of a tree. All tests indicate uniformity of relative annual ring width in the growth patterns of normal uninjured trees.

Trees growing too near water to be dependent upon seasonal precipitation do not show sensitive records, however; with a constant water supply, their growth rate is influenced by the more constant factors of soil and age; hence their records are of no use to the dendrochronologist. The average precipitation for the South and Middle West, so much above the averages for the Southwest, was long the source of a fear that the ring record of trees from those areas might show so little variation from year to year that no characteristic pattern could be obtained from them. Without such a characteristic pattern extending far enough into the past to overlap the pattern of the mound specimens, dating would have been impossible.

Our first problem was to discover that the variations in annual precipitation were sufficient to produce appreciable growth changes and hence sensitive ring records in this area. Our second was to learn which species of trees carried the records best for our purpose, neither too complacent nor so sensitive as to be erratic. Our third problem was to find whether these trees would cross date and hence give a master chart for the area; and our fourth was to locate trees of the requisite species with records extending far enough into the past to pick up the records of wood from the mounds.

The first, second, and fourth problems solved themselves together. While a number of different species of trees—pine, oak, juniper, hickory, gum, elm, maple, and cucumber—showed records of some sensitivity, the best records were found to be carried by those trees which likewise carried the longest records: the oaks and the junipers. The white oak (*Quercus alba*), the eastern red cedar (*Juniperus virginiana*), and the southern white cedar (*Chamaeocyparis thyoides*) carry records sensitive to annual precipitation changes and yet grow slowly enough to provide long ring sequences. Moreover, oak and red cedar are the two species of wood most commonly found as charcoal or as partially decayed posts in the mounds. As the oaks were the least prevalent of the three it was decided to concentrate for the present upon the study of the junipers.

Junipers have never been used to any extent for southwestern dating, as their habitat of poor soil and relatively low altitude, about 4.000 feet, makes their records tend toward being erratic and full of double or false rings. As the yellow pine (*Pinus ponderosa*), growing in higher altitudes and providing records much better for tree ring analysis, was largely used for beams of the ancient pueblos, pine has been taken as the foundation of the tree-ring studies for the Southwest pueblo area. Its close relatives, the piñons and the Douglas fir, are also used.

In the southeastern part of the United States the junipers grow at lower altitudes and in a climate sufficiently humid to provide ring records which are sensitive but much less erratic than those of western specimens. Nevertheless, the southern cedars are still more difficult than are the western yellow pines. Thus our third problem, that of cross dating, requires application of new techniques.

Dating by tree-ring analysis depends primarily upon the similarity of climate and of weather effects in trees over a considerable area, so that the cross identity of the specimens can be established in every ring. As this cross dating must be developed to a certainty beyond question before dates may be published for southeastern mounds, the publication of these dates is necessarily delayed during a few years of study. Dr. Douglass, working in the Southwest, published his first date 25 years after the beginning of his study. In undertaking the middle western and southeastern work it was estimated that from 3 to 5 years of work would be required before dates could be produced. Of that period, 2 years of part-time study have been covered. Approximately 500 specimens of various woods have been collected from modern trees and from the mounds of eastern Tennessee. Of these, five modern red cedar specimens carry records old enough to extend a master chart back to 1321 A. D. Onto this record the sequences of the best mound specimens are to be matched. Mound specimens come from Sites Nos. 19, 1, and 5, of which Site No. 19 is best represented.

The techniques to be employed in progressing toward the much desired result, dating the mounds, will consist of measuring ring areas along definite lengths of the ring in the circuit, measuring ring widths, mathematical analysis of their curves, and analysis of their cycles by means of the Douglass cyclograph, and comparisons of all double rings and injury rings, such as may be attributable to late spring frosts. The degree of cross dating of modern trees must be expressed as a comparison for the degree of cross dating of modern and of mound specimens, and hence as a measure of the certainty of dates obtained from the latter. Dates on southeastern mounds are not yet ready for publication, but their publication may be expected within 2 or 3 years of further study.

In connection with the analysis of tree rings for dating, another aspect of tree-ring records has been studied. Since the modern cedar growth of eastern Tennessee trees has been shown to have a correlation with water year precipitation records of 69.5 percent ± 3.64, with a standard error of 5.40, and a correlation with water year run-off of 58.7 percent ± 1.68, with a standard error of 2.49, it is evident that the variations in annual precipitation of the past may be computed with a fair degree of accuracy from the tree growth of the past. The completed analysis of southeastern juniper rings may thus be expected to produce not only the dates of Mound Builder structures, but also material on past weather fluctuations of importance in archaeological, meteorological, and ecological studies.

CONCLUSIONS

By William S. Webb

In attempting to generalize on the relations which may have existed among the 23 sites investigated in the survey of the Norris Basin, it appears that on a basis of similar outstanding characters, these sites naturally fall into four or five major divisions, which may be enumerated as follows:

	Sites
1. Stone mounds	2
2. Caves	6
3. Cemetery	1
4. Burial mounds	3
5. Earth mounds and villages	11

STONE MOUNDS

Of the stone mounds, Site No. 1 and Site No. 18, little can be said by way of certain conclusion from data procured in this survey. Both sites had been previously excavated and very largely destroyed. These mounds, evidently burial mounds built of stone, were of the usual small type, easily recognized by anyone, and were just such as to attract the attention and excite the curiosity of the uninitiated. Their small size made complete destruction easy. They usually occur on the top of ridges or elevated terraces and are usually associated with no other evidence of occupancy. They are known to occur in southern Indiana, southern Ohio, central and eastern Kentucky, West Virginia, and east Tennessee. Many other stone mounds, occurring outside of Norris Basin, but in the general vicinity, seemed to have all been destroyed by pothunters in a manner similar to Sites Nos. 1 and 18. So general has been the destruction that it may be doubted if enough of these stone mounds can be found undisturbed to yield their story if properly investigated.

CAVE SITES

In this group may be placed six sites, namely, Sites Nos. 3, 12, 13, 14, 20, and 23. Of this group of sites, No. 20 was clearly not a habitation site, but a natural cleft or rock fissure which had been used as a place of deposit for the dead. As has been pointed out, its chief interest consisted in the skeletal remains found scattered on the cave floor. The physical characteristics of this material seem to indicate that this site is unique among those of the area considered, and probably represents the hasty burial of a small and perhaps transient group in the Norris Basin. Since no other skeletal material of similar kind has been found in this survey under like conditions, it seems reasonable to conclude that the people represented by the skeletons from this site exerted very little influence on the archaeology of this region.

While evidence of occupation was very slight in Sites Nos. 14 and 23, it was much more important in Sites Nos. 3, 12, and 13. Certainly it may be concluded that a rather primitive people once occupied the caves of this region. The occupancy does not necessarily indicate great numbers, and may at any one site have been an intermittent one. Perhaps not all caves in the region were occupied at the same time, but at one time or another most of them were used as shelters for some period. These people buried their dead on the cave floors, under and in midden debris deposited by their occupancy. Bodies were usually fully flexed, without artifacts. Bone and shell were extensively used to make simple artifacts. Burial of partially cremated remains of a few persons seemed customary, the cremation having taken place elsewhere.

As has been pointed out, these sites seem quite similar to sites in eastern Kentucky, which have been attributed to some members of the Algonquian family. At least the occupancy of caves of this region by a people of quite primitive type seems demonstrated. It is assumed that this occupancy antedated that of the village-building people, since the cave dwellers had rather crude artifacts characteristic of their cultural level, and later evidences of development are not found in the caves. In order to evaluate the extent of the relation of these Tennessee sites to similar Kentucky sites, an analysis is presented of the relation of Site No. 3 to Sites Nos. 12 and 13 of Norris Basin, and a comparison of the cultural traits of Site No. 3 with three Kentucky cave sites, designated as W (Wilson[1]), D (Dehart[2]), and S (Stamper[3]).

It is also to be observed that the cultural traits at all of these cave sites is noticeably similar to one of the later components of the Stallings Island[4] complex, as shown in the tabulation which follows.

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[1] Funkhouser and Webb, 1929, p. 58.

[2] Funkhouser and Webb, 1930, p. 283.

[3] Funkhouser and Webb, 1930, p. 266.

[4] Claflin, 1934.

LIST OF CULTURAL TRAITS SHOWN BY OCCUPANTS OF CAVES IN NORRIS BASIN AND IN ROCK SHELTERS OF EASTERN KENTUCKY

List of traits	Norris Basin sites			Eastern Kentucky sites			Stallings Island Mound
	3	12	13	W	D	S	
Occupancy of caves as shown by midden	×	×	×	×	×	×	--------
Burials in floors of dwelling place	×	------	×	×	×	×	×
Predominance of flexed burials	×	------	×	×	×	×	×
Burials usually devoid of artifacts	×	------	×	×	×	×	×
Occasional bundle burial of bones	×	------	------	×	×	------	×
Occasional burial of cremated remains	×	------	------	------	------	×	--------
Cremated remains accompanied by artifacts	×	------	------	------	------	×	--------
Pottery not used as mortuary offerings	×	------	×	×	×	×	×
Flat bar two-holed gorgets	×	×	×	×	×	×	×
Sherds of steatite vessels	×	------	×	------	------	------	×
Wide range of stemmed projectile points	×	------	------	×	×	×	×
Sherds of sandstone vessels	------	------	×	------	×	×	--------
Pestles	------	×	×	------	×	×	--------
Mortars (lapstones)	------	------	×	------	------	×	×
Limestone hoes	------	×	------	×	×	×	×
Absence of all evidence of smoking custom	×	×	×	×	×	×	×
Considerable use of bone for awls	×	------	×	×	×	×	×
Carved bone handles	×	------	------	------	×	×	×
Spoons cut from tortoise carapace	×	------	------	------	×	×	--------
Femora of bear cut off and hollowed	×	------	------	×	------	×	--------
Little use of worked shell	×	------	×	×	×	×	×
Pottery gravel tempered	×	×	×	×	×	×	×
Pottery rims plain and straight	×	------	×	×	×	×	×
Pottery grass paddle marked	×	------	×	×	×	×	--------
Pottery small cylindrical paddle cord wrapped	×	×	×	------	×	------	--------
Pottery without handles or lugs	×	×	×	×	×	×	×
Stamped ware, rectangular mesh	×	×	------	------	×	------	×
Textile impressed (close-woven ribbed)	×	×	×	------	------	------	×
Pots with four legs	×	×	------	------	------	------	×
Pottery comb or brush scratched	×	×	×	×	×	------	×
Indented rim bands	------	------	------	------	------	×	×
Sherds often drilled below rim	×	------	×	×	×	------	×
Total traits 32	27	12	21	19	24	24	23

Site No. 3 has 27 traits, or 84 percent.
Site No. 12 has 12 traits, or 37 percent.
Site No. 13 has 21 traits, or 66 percent.
Number of traits present at all three sites, 8, or 25 percent.
Number of traits present at two sites only, 13, or 41 percent.
Number of traits present at one site only, 10, or 31 percent.
Sites Nos. 3 and 12 have a total of 29 traits—10 in common, or 34 percent.
Sites Nos. 3 and 13 have a total of 30 traits—18 in common, or 60 percent.
Sites Nos. 12 and 13 have a total of 24 traits—9 in common, or 37 percent.

COMPARISON OF SITE NO. 3 WITH THREE KENTUCKY SITES

Of a total of 32 traits:

Site No. 3 has 27 traits, or 84 percent.
Wilson Site has 19 traits, or 60 percent.
DeHart Site has 24 traits, or 75 percent.
Stamper Site has 24 traits, or 75 percent.
Traits present at all four sites, 15, or 46 percent.
Traits present at Site No. 3 and two others, 6, or 18 percent.
Traits present at Site No. 3 and one other, 4, or 12 percent.
Traits present at Site No. 3 and none other, 3, or 9 percent.
Traits present at other sites and not at Site No. 3, 5, or 15 percent.
Site No. 3 and Wilson have a total of 28 traits—18 in common, or 64 percent.
Site No. 3 and DeHart have a total of 30 traits—21 in common, or 70 percent.
Site No. 3 and Stamper have a total of 32 traits—19 in common, or 59 percent.

It would appear from this analysis that while Sites Nos. 3, 12, and 13 show definite relationship (34–60 percent), Site No. 3 is even more closely related to the three Kentucky sites, as shown by percentage of traits in common: 64, 70, and 59 percent.

The Stallings Island site has 23 of the 32 listed traits, or 72 percent. Site No. 3 and Stallings Island have a total of 30 traits—20 in common, or 67 percent. That is, Stallings Island seems as closely related to Site No. 3 as the Kentucky Rock Shelters.

Burial Mounds of Earth

Under this head may be included Sites Nos. 16, 21, and 22. Site No. 16 is characterized by fully flexed skeletons buried generally without artifacts. Sites Nos. 21 and 22 are characterized by bundle burial of bones. Deposited bones were not in anatomical order and skeletons were usually incomplete. Burials were generally devoid of artifacts. There was no evidence on these sites of any structures or other indication of a village and generally very little evidence which would give a clue to the identity of the builders of these burial mounds. Permission could not be obtained for unlimited exploration on these sites, so evidence was limited to the meagre finds in the mounds.

Earth Mounds and Village Sites

Some 11 sites, Nos. 2, 4, 5, 6, 7, 8, 9, 10, 11, 17, and 19, may be grouped and classed as earth mounds and village sites. All of these except Site No. 7 are notable for showing rectangular post-mold patterns of dwellings and town houses. While Site No. 7 does not show any structure pattern, yet on other evidence it seems related to this group.

Under the designation "rectangular structure" many of the characteristic features of these sites have been separately discussed. There is presented in the following chart a tabulation and study of the cultural traits found on 10 of these sites showing rectangular post-mold patterns. In this table are shown 75 cultural traits which appear for this group to be the most distinctive feature of these sites. On the basis of this tabulation and study of traits it appears that these sites fall definitely into two groups. Sites Nos. 2, 4, 5, 6, 8, 9, and 17 have been designated as showing "small-log" construction in building and Sites Nos. 10, 11, and 19 have been designated as showing "large-log" construction. Site No. 5 has both types of structures but is predominantly a "small-log" type of site. The distinction between these two types of construction has been discussed in the section of "rectangular structures." It definitely appears that the separation of sites on this basis into two groups is not an idle one. There is here apparent a definite line of cleavage in the cultural traits. While some traits are common to all of these sites, yet other traits are found to occur only on sites in one group. To illustrate in part: while both groups had earth-covered town houses, and showed multiple occupancy of sites and all structures were rectangular, yet one finds burned town-house structures, clay seats, square altars, and cane impressions on town-house floors *only* in "small-log" town houses and *only* in the sites showing "large-log" construction does one find horizontal large log molds on town-house floors; burials in sitting posture in pits in the floor of town houses; bone hairpins; and strap handles on pottery vessels. This offhand illustration of the association of traits, taken at random from the tabulation, would seem to indicate that separation of these sites into two groups on a basis of type of construction of buildings leads to the correct separation and grouping of these sites as manifested by the presence or absence of other traits. This fact is clearly brought out by the following analysis of the cultural traits. In fact, if no obvious basis for separation, such as "large-log" and "small-log" construction, had been observable, still the analysis of the remaining cultural traits would have indicated the same, and it is believed the correct, division of sites in the two groups.

TABULATION OF CULTURAL TRAITS ON ALL SITES SHOWING POST-MOLD PATTERNS

	Sites									
	2	4	5	6	8	9	10	11	17	19
GENERAL TRAITS										
Earth mounds on bank of large stream	×	×	×	×	×	×	×	----	×	×
Village surrounding mound	×	----	×	----	----	×	×	----	×	×
Village remains under mound	----	----	×	----	----	×	×	----	×	×
Storage bins dug in hardpan	×	----	×	----	----	----	----	×	×	----
Fire-cracked stones in ash bed	×	×	×	----	----	×	----	----	×	×
Small areas floored with river pebbles	×	----	×	----	----	----	----	----	×	----
Midden deposited under mound	----	×	----	×	----	×	×	----	×	----
STRUCTURE TRAITS										
Rectangular post-mold patterns	×	×	×	×	×	×	×	×	×	×
Dwelling-house patterns, not earth covered	×	----	×	----	----	----	×	×	×	----
Dwelling-house patterns under mound	----	×	×	----	----	×	×	----	×	----
Earth-covered town houses	×	----	×	×	×	×	×	----	×	×
Successive superposition of town houses	×	----	×	----	×	×	×	----	×	×
Structure floors constructed of clay	×	×	×	×	×	×	×	×	×	×
Orientation of structures in cardinal directions	----	×	×	----	----	×	----	----	----	----
Dwellings constructed of small logs	×	×	×	----	----	×	----	----	×	----
Town house constructed of small logs	×	----	×	×	×	×	----	----	×	----
Base of wall posts set in trenches	×	×	×	----	×	×	----	----	×	----
Corners of structure closed by small stakes	×	×	×	×	×	×	----	----	----	----
Corners of structure not closed by small stakes	----	----	×	----	----	----	×	×	×	×
Door in corner of structure	----	×	×	----	×	×	----	----	×	----
Horizontal log molds on inside of trench	×	----	----	----	×	----	----	----	----	----
Horizontal log molds on outside of trench	×	----	×	----	×	×	----	----	----	----
Burned town house structures, primary floor	×	----	×	×	----	×	----	----	----	----
Cane and grass used as thatch	×	×	×	×	×	×	----	×	×	----
Mats of woven cane and bark used on roof	×	----	----	×	----	----	----	----	----	----
Slabs of bark used on roof of structure	×	----	----	----	----	×	----	----	----	----
Cane impressions on town-house floor	----	----	----	×	×	×	----	----	----	----
Dwellings constructed of large logs	----	----	×	----	----	----	×	×	----	----
Town house constructed of large logs	----	----	----	----	----	----	×	----	----	×
Horizontal large log molds on town-house floor	----	----	----	----	----	----	×	----	----	×
Vertical cleavage plane over post molds	×	----	----	----	----	×	----	----	----	----

TABULATION OF CULTURAL TRAITS ON ALL SITES SHOWING POST-MOLD PATTERNS—Continued

	Sites									
	2	4	5	6	8	9	10	11	17	19
STRUCTURE FURNITURE										
Rectangular clay seats	×	----	×	×	×	×	----	----	----	----
Rectangular elevated clay "altars"	×	----	----	×	----	×	----	----	×	----
Altars having four circular basins	×	----	----	----	----	×	----	----	----	----
Altars having one central basin	----	----	----	×	----	×	----	----	×	----
Altars showing intentional destruction	----	----	----	×	----	×	----	----	×	----
Fire on level floor of structure	×	×	×	----	×	×	----	----	×	----
Raised circular fire basins	----	----	×	----	×	----	----	×	×	----
Fire in circular pit in floor	----	×	×	----	----	----	×	×	×	×
Fire basins outside of structures	×	×	×	----	----	----	×	×	×	----
BURIAL TRAITS										
Burials in deep pits	----	----	----	----	----	----	×	----	----	×
Burials in floor of structure	----	----	----	----	----	----	×	----	×	×
Burials in sitting posture	----	----	----	----	----	----	×	----	----	×
Burials with artifacts	----	----	----	----	----	----	×	----	×	×
Burials with dogs	----	----	----	----	----	----	×	----	----	----
Burials flexed	----	----	----	----	----	----	×	×	×	×
Grave containing strips of bark	----	----	----	----	----	----	×	----	----	×
Pottery not used as burial offerings	----	----	----	----	----	----	×	×	×	×
Pipes not used as burial offerings	----	----	----	----	----	----	×	×	----	×
ARTIFACT TRAITS										
Large discoidals	×	----	×	----	×	----	×	×	----	×
Steatite fragments	×	----	×	----	×	×	----	----	----	----
Perforated shell hoes scattered in mound	×	×	×	×	----	×	----	----	×	----
Snail shells scattered in mound	×	----	×	×	----	×	×	----	----	----
River pebble hammerstones	×	----	×	----	----	----	×	×	×	×
Small gamestone discs	----	×	×	----	----	×	×	×	----	×
Discs made from sherds	----	----	----	----	----	×	×	×	×	×
Bone hairpins	----	----	----	----	----	----	×	×	----	×
Pipes, stone or clay	×	----	----	----	----	----	×	×	×	----
Serrated arrow points	----	----	----	----	----	----	×	×	----	----
Shell ear plugs	----	----	----	----	----	----	×	×	----	----
Perforated animal teeth	----	----	----	----	----	----	----	×	----	×
CERAMIC TRAITS										
Relative abundance of plain sherds	----	×	×	×	×	×	×	×	----	×
Cord-wrapped, paddle-impressed	×	×	×	×	×	×	×	×	----	×
Textile-impressed, plain twining	×	×	×	----	----	×	×	×	×	×
Textile-impressed, twilled twining	×	×	×	----	----	×	×	×	×	×
Plain surface "salt pans"	----	----	×	----	----	----	×	×	----	×
Pointed-rim pots with round lug	----	----	×	----	----	----	×	×	----	×
Jars with rim bosses (flutings)	----	----	----	----	----	----	×	×	----	×
Exclusive use of loop handles	×	×	×	----	×	×	----	----	×	----
Strap handles	----	----	----	----	----	----	×	×	----	×
Elongated rim lugs	----	----	----	----	----	----	×	×	×	×
Loop handles raised above rim	×	×	×	----	----	×	----	----	×	----
Loop handle raised and bifurcated	×	×	×	----	----	×	----	----	----	----
Loop handles with pits or lobes	×	----	×	----	----	×	----	----	----	----
Small quantity of painted ware	----	----	×	----	----	----	×	----	×	----
Total traits	39	24	45	19	21	41	44	31	40	35

Site No. 2 has 39 traits, or 52 percent.
Site No. 4 has 24 traits, or 32 percent.
Site No. 5 has 45 traits, or 60 percent.
Site No. 6 has 19 traits, or 25 percent.
Site No 8 has 21 traits, or 28 percent.
Site No. 9 has 41 traits, or 55 percent.
Site No. 10 has 44 traits, or 59 percent.
Site No. 11 has 31 traits, or 41 percent.
Site No. 17 has 40 traits, or 53 percent.
Site No. 19 has 35 traits, or 47 percent.
Traits present at all 10 sites, 2, or 2.7 percent.
Traits present at 9 out of 10 sites, 2, or 2.7 percent.

Traits present at 8 out of 10 sites, 5, or 6.6 percent.
Traits present at 7 out of 10 sites, 1, or 1.3 percent
Traits present at 6 out of 10 sites, 13, or 17.3 percent.
Traits present at 5 out of 10 sites, 9, or 12 percent.
Traits present at 4 out of 10 sites, 15, or 20 percent.
Traits present at 3 out of 10 sites, 14, or 18.6 percent.
Traits present at 2 out of 10 sites, 13, or 17.3 percent.
Traits present at 1 out of 10 sites, 1, or 1.3 percent.
Sites Nos. 2 and 4 have a total of 46 traits—17 in common, or 37 percent.
Sites Nos. 2 and 5 have a total of 52 traits—32 in common, or 61.5 percent.
Sites Nos. 2 and 6 have a total of 44 traits—14 in common, or 32 percent.
Sites Nos. 2 and 8 have a total of 43 traits—17 in common, or 39.5 percent.
Sites Nos. 2 and 9 have a total of 50 traits—30 in common, or 60 percent.
Sites Nos. 2 and 10 have a total of 69 traits—14 in common, or 20 percent.
Sites Nos. 2 and 11 have a total of 58 traits—12 in common, or 21 percent.
Sites Nos. 2 and 17 have a total of 56 traits—23 in common, or 41 percent.
Sites Nos. 2 and 19 have a total of 62 traits—12 in common, or 19 percent.
Sites Nos. 4 and 5 have a total of 46 traits—23 in common, or 50 percent.
Sites Nos. 4 and 6 have a total of 28 traits—9 in common, or 32 percent.
Sites Nos. 4 and 8 have a total of 34 traits—11 in common, or 32 percent.
Sites Nos. 4 and 9 have a total of 43 traits—22 in common, or 51 percent.
Sites Nos. 4 and 10 have a total of 56 traits—12 in common, or 21 percent.
Sites Nos. 4 and 11 have a total of 45 traits—10 in common, or 22 percent.
Sites Nos. 4 and 17 have a total of 46 traits—18 in common, or 39 percent.
Sites Nos. 4 and 19 have a total of 49 traits—10 in common, or 20 percent.
Sites Nos. 5 and 6 have a total of 51 traits—13 in common, or 25.5 percent
Sites Nos. 5 and 8 have a total of 47 traits—19 in common, or 40 percent.
Sites Nos. 5 and 9 have a total of 54 traits—32 in common, or 59 percent.
Sites Nos. 5 and 10 have a total of 65 traits—24 in common, or 40 percent.
Sites Nos. 5 and 11 have a total of 57 traits—19 in common, or 33 percent.
Sites Nos. 5 and 17 have a total of 56 traits—28 in common, or 50 percent.
Sites Nos. 5 and 19 have a total of 61 traits—19 in common, or 31 percent.
Sites Nos. 6 and 8 have a total of 29 traits—11 in common, or 38 percent.
Sites Nos. 6 and 9 have a total of 42 traits—18 in common, or 43 percent.
Sites Nos. 6 and 10 have a total of 55 traits—8 in common, or 15 percent.
Sites Nos. 6 and 11 have a total of 45 traits—5 in common, or 11 percent.
Sites Nos. 6 and 17 have a total of 48 traits—11 in common, or 23 percent.
Sites Nos. 6 and 19 have a total of 48 traits—6 in common, or 12 percent.
Sites Nos. 8 and 9 have a total of 44 traits—18 in common, or 41 percent.
Sites Nos. 8 and 10 have a total of 57 traits—8 in common, or 14 percent.
Sites Nos. 8 and 11 have a total of 45 traits—7 in common, or 15 percent.
Sites Nos. 8 and 17 have a total of 49 traits—12 in common, or 24 percent.
Sites Nos 8 and 19 have a total of 48 traits—8 in common, or 16 percent.
Sites Nos. 9 and 10 have a total of 69 traits—16 in common, or 23 percent.
Sites Nos. 9 and 11 have a total of 63 traits—9 in common, or 14 percent.
Sites Nos. 9 and 17 have a total of 56 traits—25 in common, or 44 percent.
Sites Nos. 9 and 19 have a total of 62 traits—14 in common, or 22 percent.
Sites Nos. 10 and 11 have a total of 48 traits—27 in common, or 56 percent.
Sites Nos. 10 and 17 have a total of 60 traits—24 in common, or 40 percent.
Sites Nos. 10 and 19 have a total of 46 traits—33 in common, or 71 percent.
Sites Nos. 11 and 17 have a total of 54 traits—17 in common, or 31 percent.
Sites Nos. 11 and 19 have a total of 44 traits—22 in common, or 50 percent
Sites Nos. 17 and 19 have a total of 56 traits—19 in common, or 34 percent.

In the rearrangement given below of this data, by percentages, in an attempt to show relationship it is not to be supposed that any particular significance is to be attached to the absolute value of any percentage relationship. It does appear reasonable, however, to assume that a relatively high percentage of traits held in common by two sites indicates relatively close relationship, and conversely a relatively low percentage would seem definitely to suggest lack of relationship.

In the following tabulation pairs of sites are arranged in columns under the proper range of their calculated percentage relationship.

Rearrangement of Percentages to Show Relationship

High percentage—relatively close relationship			Low percentage—lack of relationship	
Above 60 percent	60–51 percent	50–41 percent	22 percent or less	
(2)—(5)	(2)—(9)	(2)—(17)	(2)—*10*	(6)—*10*
10—19	(4)—(9)	(4)—(5)	(2)—*11*	(6)—*11*
	(5)—(9)	(5)—(17)	(2)—*19*	(6)—*19*
		(6)—(9)	(4)—*10*	(8)—*10*
		(8)—(9)	(4)—*11*	(8)—*11*
		(9)—(17)	(4)—*19*	(8)—*19*
		10—11	(9)—*11*	
		11—19	(9)—*19*	

If we designate large-log town houses by italics and small-log sites by parentheses it will be seen how this analysis emphasizes that sites showing greatest cultural similarity are those having the same type of house construction, while those sites which have the least cultural affinity are sites having different house types.

It would thus appear that on some 11 sites, closely associated geographically and having in common many rather unusual customs, it is possible to discern two groups of traits mutually exclusive which seem to have existed simultaneously in this area. Each group of cultural traits seems to follow a definite type of house construction.

SPECULATIONS

In the preparation of any scientific report on field work in archaeology it is obvious that a very clear distinction should be drawn by the author between what he saw and what he thought; between fact and opinion. In the chapter on "Conclusions" the author has presented what appears to him to be inescapable conclusions based on the actual findings in Norris Basin. These conclusions leave much to be desired. No attempt has been made therein to relate any of the early peoples of Norris Basin to any of the historic groups. It is a matter of regret that such connections have not been unmistakably apparent. While having definitely in mind the distinction between the validity which should attach to "conclusions" and the uncertainty inherent in "speculations," it is believed nevertheless that it may be worth while to "speculate" upon the possible historic connection of these people, and endeavor to present the evidence upon which tentative conclusions may be reached. Such conclusions, predicated upon unproven hypotheses, however reasonable, are to be regarded as tentative only, and to be subject to confirmation or rejection in the light of later and better information.

The Norris Basin is about 40 miles north of Little Tennessee River, which was the site, in historic times, of the Over Hill Cherokee. This branch of the Cherokee Nation was found in possession of this region by the early travelers—the first white men to come into east Tennessee. Since there are no historic records of any early Indian occupancy of the region about Norris Basin, or of any portion of east Tennessee nearer to it than the settlements of the Over Hill Cherokee, it is natural to inquire what cultural connection, if any, may have existed in prehistoric times between these areas. Obviously it would be highly desirable to compare the cultural complex found on sites in the Norris Basin with a complex of traits definitely diagnostic of Cherokee material culture. In seeking to do this it becomes at once apparent that it is not easy to determine what traits are definitely diagnostic of Cherokee material culture. In order to set up such a criterion it was determined in this study to list the traits as reported by a number of writers who have excavated sites having some measure of known connections with historic Cherokee occupation. The four groups of traits selected to constitute the Cherokee cultural complex are listed below with brief explanations concerning each.

(1) M. R. Harrington[5] reported on Cherokee traits from upper Tennessee River where he excavated a number of separate sites. The chiefest of these were Bussells Island at the mouth of the Little Tennessee River and Hiwassee Island at the mouth of the Hiwassee River. Traits from these two sites and others on the adjacent mainland excavated by him were combined into one list under the designation "Harrington." Only such traits were selected as were stated to be, in his opinion, assignable to the Cherokee. This seemed justified since the purpose of this compilation was to obtain a composite picture of Cherokee material culture.

(2) Cyrus Thomas[6] in his series of mound explorations, beginning about 1882 and continuing for many years, excavated many of the large mounds which mark the center of various important towns of the Over Hill Cherokee on Little Tennessee River. In his report

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[5] Harrington, 1922.

[6] Thomas, 1890.

of these explorations he presents many traits discovered by these excavations, which traits are generally regarded as associated with the Cherokee complex. His report on these particular sites, while sufficiently complete for his purpose, leaves much to be desired by way of detailed information. In particular no detailed information is given concerning pottery artifacts from these sites beyond the number of vessels recovered. In the spring of 1934 the author had opportunity to visit the sites of Settacoo and Toqua town sites as designated by Timberlake, which were excavated by Thomas, and to make a collection of potsherds from each site. From these collections of sherds it is possible to determine many of the pottery traits and thus to supplement the list of traits reported by Thomas. This composite list, as supplemented, is entered in the tabulations of traits under the designation "Thomas." The traits reported by Thomas are from sites excavated on Little Tennessee River, all of which were known to have been occupied by Cherokee in historic times.

(3) The report of Heye, Hodge, and Pepper[7] on the Nacoochee Mound in northern Georgia was selected to furnish another list of Cherokee traits because of the known historic connection of this site. Mooney identifies it as a village visited by De Soto in 1540. The Cherokee occupation of this site continued up to about 1820. This list of traits is designated as "Nacoochee" in the tabulation.

(4) A fourth list of traits which possibly may represent Cherokee material culture was obtained as the result of the exploration of a site near Dandridge, Tenn., in 1935 by Prof. T. M. Lewis for the University of Tennessee. The report of this excavation has not yet been published, but from personal communication from Professor Lewis and from photographs furnished by him, a list of traits has been made out which is designated "Dandridge" in the tabulation.

On the map of the Tennessee Valley, frontispiece, the location of these sites is shown as follows:

Hiwassee Island at Mouth of Hiwassee River; Bussell's Island at mouth of Little Tennessee River; Toqua and Settico on Little Tennessee River above the mouth of Telliquo River; Dandridge north of the French Broad River; and Nacoochee in northeastern Georgia.

Sites Nos. 19 and 10 of the Norris Basin, which seem most nearly related to this culture complex, have been chosen for comparison. In the following tabulation, 62 traits have been selected, each of which occurs at two or more sites. All traits occurring on only one site have been eliminated as having no value in this comparison.

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[7] Heye, Hodge, and Pepper, 1918.

PROVISIONAL CHEROKEE CULTURAL TRAITS AS REPORTED BY VARIOUS WRITERS, COMPARED WITH TRAITS FOUND AT SITES NOS. 19 AND 10, NORRIS BASIN

	Harrington	Thomas	Nacoochee	Dandridge	Site No. 19	Site No. 10
BURIAL CUSTOMS						
1. Mounds of earth close to large stream	×	×	×	×	×	×
2. Mounds mark site of town houses, earth covered	×	×	×	×	×	×
3. Burials made in town-house mounds	--------	×	×	×	×	×
4. Burials also made in village cemetery	×	--------	×	--------	×	--------
5. Burials made in the flesh	×	×	×	×	×	×
6. Burials usually loosely flexed	×	--------	×	×	×	--------
7. Some burials extended on back	×	×	×	--------	--------	--------
8. Few burials extended face down, limbs flexed	×	×	×	--------	×	--------
9. Some burials in sitting posture	--------	×	×	--------	×	×
10. Graves usually rectangular in form	×	--------	×	×	×	×
11. Double burials do occur	×	--------	--------	×	--------	--------
12. About 30 percent of burials show artifacts	×	×	×	×	×	×
13. Dog burials in association	×	--------	--------	--------	--------	×
14. Graves covered with wood and bark	×	×	×	×	×	--------
15. Some graves covered by clay layer, fire burned	×	--------	×	--------	×	--------
16. Piles of stones in disarray in mound	--------	--------	×	--------	×	--------
17. Individual seems to have been killed by same type of arrow used as burial offering	×	--------	--------	--------	--------	×
STONE ARTIFACTS						
1. Round celts—probably hafted axes	×	×	×	×	×	×
2. Stone pipes, elbow form, flanged	×	×	×	×	--------	×
3. Triangular arrow points exclusively	×	×	×	×	--------	×
4. Large discoidals—biconcave	×	×	--------	--------	--------	--------
5. Large disks—biplane	--------	--------	×	×	×	×
6. Small stone disks—gamestones (?)	×	×	×	×	×	×
7. Flint knives, long ovate	×	×	×	×	×	--------
8. Stone hoes, limestone, slate, etc	×	--------	--------	--------	×	--------
9. Flint knives placed at base of skull, often transversely	×	×	×	--------	×	--------
10. Spatulate ceremonial (?) ax, polished limestone	--------	×	--------	×	×	--------
11. Pipes used as mortuary offerings	×	×	×	×	--------	--------
12. Flat celts—straight edges, fleshers (?)	×	--------	×	×	--------	--------
13. Gourd rattles (?) adjacent to femur, as indicated by group of quartz pebbles remaining together	--------	--------	--------	×	×	--------
BONE AND SHELL ARTIFACTS						
1. Bone beamers or drawshaves	×	--------	×	×	--------	--------
2. Bone hairpins, pointed base and other forms	--------	×	--------	×	×	×
3. Large bone cut obliquely to point hole in base	×	×	--------	×	--------	×
4. Considerable use of marine shell for manufacture	×	×	×	×	×	×
5. Mask gorgets	×	×	--------	×	×	--------
6. Rattlesnake gorgets	×	×	--------	×	×	--------
7. Shell ear pins	×	×	×	×	--------	×
8. Circular gorgets, scalloped edges	×	×	×	--------	--------	--------
POTTERY ARTIFACTS						
1. Pottery infrequently used as mortuary offerings	×	×	×	×	×	--------
2. Squat spheroidal pots, large mouth	×	×	×	×	×	×
3. Shallow bowls, "Cazuela" type, incurved rims	×	--------	×	--------	--------	--------
4. Pottery, mostly shell tempered	×	×	×	×	×	×
5. Pots with two strap handles	×	×	×	×	×	--------
6. Pots with four strap handles	×	×	×	×	×	--------
7. Round handles raised above rims	×	--------	--------	--------	--------	×
8. Sharply incised band of lines below pot rim	×	×	×	×	×	×
9. Notched projecting rims	×	×	×	--------	×	×
10. Beading below rim	×	×	×	--------	×	×
11. Horizontal flat lugs at rim	×	×	--------	×	×	×
12. Textile-marked salt pans	×	×	--------	×	×	×
13. Small pots—toy vessels	×	--------	×	×	--------	--------
14. Frog effigy vessels	×	×	×	×	×	--------
15. Bird effigy vessels	×	×	×	--------	--------	--------
16. Human face effigy on rim	×	×	×	×	×	--------
17. Stamped carved paddle, scroll design	×	×	×	--------	--------	--------
18. Stamped carved paddle, rectangular mesh	×	--------	×	--------	--------	×
19. Impressed by solid points—dots	×	×	×	×	×	--------
20. Impressed by hollow cylinders, cane or bone	×	×	×	--------	--------	--------
21. Impressed by cord-wrapped paddle	×	×	×	×	×	×
22. Impressed with grass-wrapped paddle	×	×	×	×	×	×
23. Pottery dishes made from sherds	×	×	×	×	×	×
24. Pottery pipes, elbow form	×	--------	×	×	--------	×
Total, 62	55	44	48	42	41	31

Analysis of Provisional Cherokee Traits

The total number of traits is 62. The number of traits reported by each observer may be tabulated as follows:

Harrington reports 55, or 88 percent.
Thomas reports 44, or 71 percent.
Nacoochee reports 48, or 77 percent.
Dandridge reports 42, or 67 percent.
Site No. 19 reports 41, or 66 percent.
Site No. 10, reports 31, or 50 percent.

Since Harrington reports the largest number of traits, that list may be made the basis of comparison.

Harrington and Thomas report a total of 59 different traits, of which 40 are held in common, or 68 percent.

Harrington and Nacoochee report a total of 59 different traits, of which 44 are held in common, or 74 percent.

Harrington and Dandridge report a total of 60 different traits, of which 38 are held in common, or 63 percent.

Harrington and Site No. 19 report a total of 62 different traits, of which 35 are held in common, or 56 percent.

Harrington and Site No. 10 report a total of 59 different traits, of which 27 are held in common, or 46 percent.

If it may be assumed that the first four columns of this tabulation contain only Cherokee traits, and are sufficient to designate the Cherokee complex, then Site Nos. 19 and 10 only correlate with this composite culture group by percentages of 66 and 50 percent, respectively. This is about the degree of correlation with Harrington of Thomas, Nacoochee, and Dandridge, i. e., 68, 74, and 63 percent.

These results as demonstrating any certain cultural connection of Sites Nos. 19 and 10 with the Cherokee seem quite unsatisfactory. In particular, although Site No. 19 appears to have a 66 percent correspondence of its traits with the provisional Cherokee total complex, and a 56 percent correspondence with the Harrington list of traits, it would nevertheless appear the part of wisdom to regard the possible connections with the historic Cherokee, while not positively denied, still not definitely established. In taking this view, which may be regarded by some as unjustifiably conservative, the author is impressed with other evidence not possible to present in such a tabulation which appears to be important. Such evidence and its possible bearing on this problem may be presented under several separate topics, as follows:

(1) Many of the most important and definitely observable traits in this provisional list of Cherokee traits are known to be very widely distributed in the southeastern area, in regions which the Cherokee, so far as is known, never occupied. Such traits as triangular arrow points, mask gorgets, and textile-marked salt-pan pottery, to mention

only a few typical illustrations, seem to be regional rather than tribal in their distribution, and their diagnostic value, so far as Cherokee relation goes, of little or no value. This fact becomes very important in this connection when we consider how very many traits in this group are found on sites far removed from known Cherokee connection. Because of this widespread distribution of many so-called Cherokee traits, it may well be doubted whether it will ever be possible to definitely fix on a list of traits defining Cherokee material culture.

(2) In comparing the traits at any site in Norris Basin with such a provisional Cherokee complex, it has not been possible to consider in the comparison the additional traits presented by rectangular town houses, and multiple occupation of sites as observed in Norris Basin. Such traits have never been reported by any writer from any Cherokee site, although such traits may have been present. Thomas, as previously suggested, reports on post-mold patterns in mounds at Toqua and Settaco, but he does not indicate what was the form of the structure discovered. Harrington suggests that some of the truncated pyramidal or platform mounds along the Tennessee River may have been sites of town houses, but again no definite information is available. The same is true of the Nacoochee report.

There are available many rather complete descriptions of the Cherokee town house as seen by early travelers, in particular by Timberlake and by Bartram. All agree that the Cherokee town house was circular in form and built on a mound. Timberlake says that the town house at Chote was "built in the form of a sugarloaf", which is taken to mean a right circular cone. At no time has any suggestion appeared that the Cherokee had ever used any form of town house other than the circular form or "rotunda." This trait, like many other Cherokee traits, seems to have been shared with other peoples, especially with the Creeks, who also had circular town houses. The fact that all sites in the Norris Basin showed only rectangular structures is an obstacle in the way of accepting Cherokee connection, even if a considerable similarity in other traits may be evident. This fact is particularly impressive when considered in connection with an absence of rectangular structures reported from known Cherokee sites and the definite knowledge that in historic times the Cherokee used circular town houses.

(3) Had the Norris Basin been inhabited by any members of the Cherokee tribe as late as 1725 it could hardly have escaped detection by early travelers, who would have left some historic reference to it. Col. George Chicken[8] certainly would have learned of any such settlement of Cherokee on Clinch or Powell Rivers when he came on an official mission to the Over Hill Cherokee. On August 2, 1725, accord-

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[8] Chicken, in Williams, Early Travels, p. 102.

ing to his journal, he met at Tunissee the headmen of each Cherokee town. These, as listed by him, were: Tunissee, Terriquo, Tullassee, Suittico, Coosaw, Elejoy, Tamantley, Cheeowee, and Conustee. Representatives were absent from the towns of Iwasee and Little Terriquo. Had it been occupied by any other people immediately prior to that time the Cherokee would certainly have had a tradition concerning it. Haywood refers to a Cherokee tradition of a Creek settlement at the mouth of the Hiwassee River when they first came to the Little Tennessee River. Dr. Thomas Walker,[9] in his trip to Kentucky in 1760, when he went through Cumberland Gap, which he named, would certainly have made note of Indian settlements of Cherokee or others which might have been in the region of the Norris Basin. The lack of any early historic record or any Cherokee tradition of any occupancy of Norris Basin seems clearly to indicate that these sites had been occupied by a people other than Cherokee at a time before the coming of the Cherokee on the Little Tennessee, and the sites on Clinch and Powell Rivers had been so long deserted that the Over Hill Cherokee had no knowledge of this occupancy. In such case the cultural connections of the builders of these large-log town houses in Norris Basin must be sought elsewhere.

In this connection it will be remembered that the Over Hill Cherokee, who always built their town houses on earth mounds, repeatedly asserted, according to Mooney,[10] that they had not themselves built these mounds, but had found them there when they came into the country. Could these mounds on Little Tennessee River have been of similar origin as those in Norris Basin? It does not seem wholly impossible. When Stephen Peete excavated the Toqua town-site mound for Thomas, and reported "stakes driven in the ground" and post molds, did he discover the pattern of a *rectangular* town-house structure? Alas, we may never know, since all of the mounds on Little Tennessee River were so "thoroughly explored" that all information we now seek has been destroyed. The author feels that the weight of probability is in favor of the conclusion that the mounds on Little Tennessee River on which the Cherokee erected many of their town houses were built by an earlier people—perhaps the same people who built the large-log town-house mounds in Norris Basin.

Without attempting to say who these earlier people were, it is believed that they left their remains of rectangular large-log town houses widely scattered far beyond the limits of Norris Basin, and it is perhaps one such site which Lewis has excavated at Dandridge, the report of which has not yet been published. If this be admitted tentatively as a possibility it would follow that these people antedating the Cherokee occupation had a material culture in many ways similar to the Cherokee, or, perhaps more correctly stated, the Cherokee adopted after coming into the region many of the cultural traits of this earlier people, which may in part account for this widespread distribution of provisional Cherokee traits.

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[9] Walker, in Williams, Early Travels, p. 168.

[10] Mooney, 1900, p. 22.

In this connection it is important to note that Thomas did not find any trade material in any of the mounds which were investigated and no evidence of any white contact. The work of Thomas shows that the mounds and their contents were all wholly within the prehistoric. It has been reported, however, that certain commercial collectors have excavated in areas surrounding these mounds and have encountered numerous trade objects, such as the Cherokee were known to have possessed in protohistoric times. These trade objects were associated with burials, and with many other artifacts of Indian manufacture similar to those found on altogether prehistoric sites.

It may well be that the coming of the Cherokee into east Tennessee was the occasion for and marked the time when this earlier people left the region. If so, the date of the last occupancy of these large-log town houses may approximate the date of the coming of the Cherokee. From an inspection of known Cherokee sites it does not seem necessary to assume a very great age for them. It may be found that the Cherokee, when Fort Loudoun was destroyed by them in 1760, had not been in east Tennessee more than 100 years, if that long. In fact, the author is inclined to the opinion that the Cherokee first occupied Little Tennessee River in the last quarter of the seventeenth century.

Further, if this idea is at all tenable that the Cherokee erected historic circular town houses on earth mounds built by this earlier people, it should be possible to find one mound as yet undisturbed in the region of Cherokee settlement, which might show the pattern of a "rotunda" at its top and a rectangular post-mold pattern at its base.

If, however, the rotunda generally was covered only with a thin coating of earth it may be that this earth layer was too thin to afford any adequate protection to fallen structures, which would in consequence be completely destroyed. This may account for the fact that no remains of fallen town houses were reported by Harrington on the Tennessee River. On this point Bartram,[11] in describing the Cherokee town house, says, "and sometimes they cast a thin superficies of earth over all." Thus, by inference, not all town houses were earth covered, and further, if the film of earth was thus insufficient to protect and preserve evidence of a "rotunda" there may be at this time no remnants of a Cherokee town house remaining anywhere.

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[11] Bartram, 1928, p. 366.

As a brief summary of these speculations on possible Cherokee connections, the following tentative suggestions are offered—without definite proof, since proof is not available at this time.

(1) Cherokee material culture cannot be exactly defined because many traits are too widespread.

(2) Cherokee built circular town houses on mounds erected by an earlier people, along Little Tennessee River, of which Toqua and Settico are examples.

(3) Circular town house remains are now probably all destroyed because there was not enough earth over them to preserve them, but the post molds may remain and should be carefully sought on sites in this region to see if they are superposed over rectangular post-mold patterns.

(4) Mounds on Little Tennessee River built by an earlier people were the result of the collapse of earth-covered rectangular structures, so that Toqua, Settico, and the other Over Hill Cherokee mounds, if undisturbed, should even yet show rectangular post-mold patterns at lower levels.

It would also appear that, in some cases, after a town house had collapsed, additional earth was carried in and deposited upon the remains. Lewis [12] reports that the lenticular loads were plainly evident in a mound recently excavated by him in Roane County, Tenn. He found a depth of earth of from 3 to 5 feet between floors, part of which was carried on the site after the collapse of a town house and before the erection of another.

(5) Dandridge mound and also Site No. 19 were built by this earlier people. They had no apparent connection with Cherokee occupancy.

(6) This earlier people probably did extend down Tennessee River beyond Hiwassee Island, although there were no rectangular structures reported by Harrington. No circular structures were reported by him because they were not preserved, although probably built by Cherokee there. However, rectangular structures have recently been found by Lewis [12] in Roane County, Tenn., not far from Bussell's Island and farther down the Tennessee River.

(7) Except for house forms and minor differences in burial customs, the material culture of this earlier people and the Cherokee was quite similar, as was also that of the Creeks.

(8) Nacoochee is Cherokee, influenced from the southeast, but it shows little connection, if any, with this earlier people in Norris Basin.

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[12] Lewis, T. M. N., University of Tennessee. Personal communication.

(9) Cherokee never at any time built rectangular town houses. All such structures appearing on sites occupied by Cherokee in historic times are to be regarded as the work of an earlier people.

Who, then, if not Cherokee, were these earlier people? If the deductions in the chapter on Conclusions is correct, we have to account for two different peoples, the large-log town-house peoples and the small-log town-house peoples.

One naturally asks if either could have been any of the Muskhogean tribes. The answer to such a question in our present state of knowledge is only a guess, but the author is inclined to consider it well within the bounds of possibility that the large-log town-house people were of Muskhogean stock. There is some evidence which appears to be growing in importance and which seems to show that the Creeks lived on the Tennessee River, and that their range of occupancy was much farther to the north in the valley of the Tennessee River than their homes in early historic times would indicate. Haywood[13] states that the Cherokee had a tradition of finding Creeks living near the mouth of Hiwassee River when they first came into that region.

Recent excavations in Madison County, Ala., in connection with the archaeological survey of the Wheeler Basin conducted by the author, seem to indicate occupancy on the Tennessee River by some branch of the Muskhogean people closely associated with the builders of the Etowah mounds. It is possible that these were some of the Upper Creek tribes. The burial at Sites Nos. 10 and 19 of bodies in a sitting posture has been discussed in the reports on these sites. Also the use of bark and strips of wood for covering graves has been found at Site No. 19. This trait was also very prominently shown at Dandridge. Attention was called to the close resemblance of these customs with burial customs of the Creeks, as reported by several white observers about 1790.

While these facts all seem to point in the same direction, certainly no one could draw from the information at hand any definite conclusion as to the identity of the builders of "large-log" town houses. While relationship with the Creeks is yet unproven, it would not be astonishing if future excavation should develop a very definite connection.

In attempting to "speculate" as to the identity of the "small-log town-house" people there is even less basis for conjecture than in the case of the large-log people. However, there is a line of suggestion, very weak from lack of proof, but representing an interesting possibility.

It has been obvious that the two people of Norris Basin occupied generally the same territory, i. e., the sites were mingled. On Site No.

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[13] Haywood, 1823, p. 234.

5, and possibly on Site No. 17, there is a suggestion that both large-log and small-log construction were used on the same site. And yet, while on these two sites these important groups partially merged, yet on all other sites the cultural traits definitely separated themselves into two groups along this line of cleavage—the type of house construction. This would seem to suggest the possibility that if there were two different peoples in Norris Basin they may have been for some period simultaneous occupants of the general region and probably had friendly intercourse between all sites in the Basin.

If it may be tentatively considered that the Creeks are responsible for the large-log construction, one has the problem of trying to find some separate and distinctly different people with whom the Creeks were associated on terms of friendship whom we might possibly identify as the small-log town-house people. The fact that the Creek Confederacy took into its organization so many remnants of different peoples in the early historic period would seem to make such a task of selection quite impossible.

However, there is one group—the Yuchi, perhaps the most problematical of all the prehistoric people of the southeastern United States—who were, in historic times, closely associated with the Creeks, and while speaking a different language and maintaining their own customs, yet rose to a prominent and respected place as the Yuchi band of the Creek Confederacy.

One naturally wonders if this apparently sincere friendship of these two peoples for each other began after the Yuchi "came south", as they are known to have done, or could such a friendship have been the result of close association in a northern home at a much earlier date than when reported by Hawkins about 1796 in his travels on the Tallapoosa River?

If we admit this possibility, we are prepared to look for evidences of the Yuchi in Norris Basin. Since no known Yuchi site has ever been carefully investigated and reported, their material culture complex is wholly unknown, and there is no basis for any identification by use of cultural material. However, it is possible that the migration of the Yuchi took place just within that vague borderland of time between the early settlement of white men on the Atlantic seaboard and the beginning of written records of the Indian population of the interior. If this be true, it suggests the bare possibility that there might be some historical record, or tradition, of the occupancy of the region by the Yuchi.

In searching the early reports of Indian occupancy in the period prior to 1700 one is struck by the story of Gabriel Arthur,[14] a servant of Abraham Wood, of Virginia, who was sent with Wood's agent,

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[14] Alvord and Bidgood, 1912, pp. 212–214.

James Needham, to explore the territory of Virginia to the westward beyond the mountains. While much that the servant Gabriel Arthur had to report is of very problematical ethnological value, the agent, James Needham, an older man, evidently of broader education and experience, had opportunity, before being killed by the Indians, to report to his employer the result of his early explorations. The most interesting single fact of all the varied details of his report is that, after traveling west by south for some 24 days, they came to a people calling themselves "Tomahitans."

It is obviously quite impossible, from the nature of this narrative, to definitely locate the habitat of this Indian tribe. However, it is clear that this tribe dwelt on the western slope of the mountains on a stream flowing to the westward and not emptying into the ocean. And they were some 24 days' travel west by south from Virginia. From such vague and uncertain information it may never be possible to do more than guess at the location of this tribe, but it should be pointed out that Norris Basin could very well have been the place where Needham found the "Tomahitans" in 1673.

Interest in this speculation grows when Swanton identifies this tribe, "the Tamahita", with the Yuchi of early historic times who were closely associated with the Creeks on Tallapoosa River and who later became an important band in the Creek Confederacy.

In presenting the evidence of the identity of the Tamahita and the Yuchi, Swanton[15] says:

> Last of all, we must not lose sight of the fact that the origin of the Tamahita, like that of the Yuchi, may be traced far north to the Tennessee mountains. It seems rather improbable that a tribe from such a distant country could have settled among the Creeks and, after living in close intimacy with them for so many years, have passed entirely out of existence without any further hint of their affiliation or any more information regarding them. And the fact that they and the Yuchi share so many points in common and appear in the same places, though practically never side by side, must be added to this as constituting strong circumstantial evidence that they were indeed one and the same people.

While probably no one seriously doubts the correctness of Swanton's identification of the Tamahita and the Yuchi, yet the possible connection between Tamahita and the builders of the small-log town house in Norris Basin, if any, is still to be demonstrated.

Since the material culture of the Yuchi or the Tamahita is unknown, this suggested possible relationship with the Creeks has for its basis only the fact that this unidentified cultural complex denominated as "small-log town house" is found to occur in the general region of the traditional home of this most problematical of tribal stocks, the Yuchi of the Tennessee mountains, along with the "large-log town-house people," who may be Creeks.

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[15] Swanton, 1922, pp. 190–191.

In this connection it is interesting to note that the present-day Yuchi has knowledge of house construction of a type quite similar to that found in Norris Basin, which has for them become obsolete. This information was obtained by Speck[16] in 1904 in his ethnological studies of the Yuchi band of the Creek nation, now living in the State of Oklahoma.

Of their house construction he says:

> The Yuchi remember still another type of family dwelling house which seems to show that the common house type of the Algonkian tribes bordering the Atlantic coast farther north was known to the Yuchi as well. We are informed by the Yuchi that the framework of this type of house, *yu*, consisted of poles stuck in the ground in parallel rows at certain distances apart. These were bent over and lashed together at the top, forming an arched passage underneath. The whole top and the sides were then covered with strips of bark cut entire from cypress trees and attached in overlapping layers to the cross pieces connecting the upright poles. Matting is also said to have been used as house covering material. Such structures are commonly remembered to have been about 10 feet high and about 16 feet square on the ground. The roof slabs were weighted down with halved logs secured at the ends to the framework. The fireplace was in the center of the floor space. It was excavated about 6 inches below the surface of the ground. A hole was left in the roof directly above the fireplace for the smoke to escape.
>
> In the way of household furniture the Yuchi remember that beds, *tou'fa*, used to consist of a framework of parallel sticks, supported by forked uprights, upon which skins were piled. These benchlike beds were ranged about the walls. Mats were suspended to form screens when desired.

This statement in many details is strangely like the house construction called "small-log" type in Norris Basin.

Finally, if the Yuchi, or Tamahita, and the Creeks were associated in 1673 and earlier in the Norris Basin, their later friendship and association is easy to explain.

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[16] Speck, 1909, pp. 40–41.

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